The Corps

of

Royal Canadian Electrical and Mechanical Engineers

RCEME Trades 1944-2020

A Reference Guide

Trade Specifications

Volume 7 - The Instrument Trades

The RCEME Heritage Archives

RCEME Trades 1944-2020

A Reference Guide

Trade Specifications

Volume 7 - The Instrument Trades

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Introduction

RCEME Trades 1944-2020, A Reference Guide summarizes the trades that were part of RCEME when the Corps was formed in 1944, and follows the development, amalgamations, changes, and history from that time to the four trades that are part of RCEME today. During the research for that document, many trades specifications and standards were found in the Library and Archives Canada (LAC) and other repositories. These were used to prepare a thumbnail history of each trade in the main reference, but space precluded the inclusion of the complete trade specification and/or standard.

This “Trades Specifications” series supports the main document and includes the original trade specifications and references as they were found at the LAC and elsewhere. This is a source document for researchers. In general, the raw photographs of the LAC file pages have been converted to a searchable .pdf file. No attempt has been made to reformat the contents of the original files.

Guide to the Series

Because of the size of some of the files, the trades have been separated into several volumes, each containing the specifications for a group of trades. The series consists of:

Volume 1 - Aircraft Trades

Volume 2 - Armourer, Armament, and Weapons Technician Trades

Volume 3 - Body and Tire Repair Trades

Volume 4 - Driver and Driver Mechanic Trades

Volume 5 - Electrical Trades

Volume 6 - Instructor Trades

Volume 7 - Instrument Trades

Volume 8 - Metals, Machinist, and Welding Trades

Volume 9 - Radar and Fire Control System (1950s) Trades

Volume 10 - Radio and Telecommunication Trades

Volume 11 - Recovery Mechanic Trades

Volume 12 - Vehicle Repair Trades

Volume 13 - Other Trades

Volume 14 - Trade Reviews

Volume 15 - Post-Unification Trades

Volume 16 - RCEME Trades in 2020

Source Documents

This is a supporting reference for *RCEME Trades 1944-2020, A Reference Guide*. The list of sources for the main document is reproduced below. Where possible, the source document (or a relevant excerpt) has been scanned and placed on the RCEME Historical Database. Sometimes, a copy may be on the Internet Archive. One location of the primary document is included - there may be other copies in existence.

Primary sources include:

Instructions Regarding Trades Tests and Tradesmen's Rates of Pay, Canadian Army (Overseas), 1943. A copy is available in the Canadian War Museum under the call reference UB 337 I57 CWM Ref Tech 1943. Short reference in this document: [Trades 1943]. This document does not relate trades to a specific Corps. The relationship to RCOC(E) and later RCEME is inferred.

Instructions Regarding Trades Tests and Trades Testing, Canadian Army, 1944. Queens Printer, 1944. A copy is available in the Canadian War Museum under the call reference UB 337 C2 I5 CWM Ref Tech 1944. Short reference in this document: [Trades 1944]. This reference had two major amendments: AL 1 dated 1 January 1945, and AL 2 (not dated), both included in the reference. This reference relates to the Canadian Army as a whole, and not just the Canadian Army Overseas. The assignment of trades to Corps includes RCEME, which is evidence that it was updated after the formation of CEME/RCEME.

Canadian Army Routine Order (CARO) No. 4230 dated 15 March 1944. The Annexes to this CARO (and subsequent CAROs that amended CARO 4230) detailed the units and trades that were to be transferred to the new Corps of RCEME. The Canadian War Museum has a set of CARO.

Canadian Army Routine Order No. 6579 dated 20 May 1946. This was the first major postwar regrouping of Army trades and classification of tradesmen. A copy is available in the Canadian War Museum under the call reference Ref Tech Folio UB 505 C2 A7. Short reference in this document: [CARO 6579 (1946)].

Canadian Army Order No. 269-1 dated 8 April 1947. This order amplified and clarified[CARO 6579 (1946)] and is part of the new Canadian Army Orders series that replaced the Canadian Army Routine Orders in 1947. A copy is available in the Canadian War Museum under the call reference Ref Tech UB 507 A6 S8. It also announced that a new publication "Canadian Army Trades Tests 1946" would be issued, (which has not been found). Short reference in this document: [CAO 269-1 (1947)].

Canadian Army Order No. 269-1 dated 22 August 1949. Trades Designations, Groupings of Trades, Responsibility for Training and Corps Affiliation. This replaced and updated [CAO 269-1 (1947)]. It also assigned trades to specific Corps. A copy is available in the Canadian War Museum under the call reference Ref Tech UB 507 A6 S8. Short reference in this document: [CAO 269-1 (1949)]. This reference was amended in CAO 269-1 dated 6 February 1950, which is included as part of this source.

Canadian Army Order No. 269-1 dated 27 November 1950. Trades Designations, Groupings of Trades, Responsibility for Training and Corps Affiliation. This replaced and updated [CAO 269-1 (1949)]. A copy is available in the Canadian War

Museum under the call reference Ref Tech UB 507 A6 S8. Short reference in this document: [CAO 269-1 (1950)].

Canadian Army Order No. 269-1 dated 5 May 1952. Trades Designations, Groupings of Trades, Responsibility for Training and Corps Affiliation. This replaced and updated [CAO 269-1 (1950)]. A copy is available in the Canadian War Museum under the call reference Ref Tech UB 507 A6 S8. Short reference in this document: [CAO 269-1 (1952)].

There would appear to have been an update to CAO 269-1 in 1954, but the CWM does not have a copy of that CAO - DHH might.

Canadian Army Manual of Trades and Specialties. This detailed the Canadian Army trade standards and specifications and replaced the Canadian Army Trades Tests series. The manual seems to have come into effect by CAO 225-52 dated 18 November 1957. There is apparently no CAO 269-1 after that date. The RCEME trades extracted from this document are dated in the late 1950s and early 1960s. A copy is available in the Canadian War Museum under the call reference Ref Tech UB 337 C2 C3 n.d. This reference is not complete. A complete version may exist at DHH (apparently not). Short reference in this document: [CAMTS].

Files in the Library and Archives, Canada (LAC). There are files in the LAC on many of the RCEME trades in the 1950s and early 1960s. These files have been reviewed and the specific file reference is contained in Annex A for the specific trade in question. See also the Army Trades Committee paragraph below. Short reference in this document: [LAC - file reference].

A specific file at the LAC is RG24-C-1-a, Volume 2165, File HQS-54-27-35-320, Trades Training & Tests - RCEME - Policy 1944-1947. It is not complete, but provides documentary evidence of the DEME position on the creation and elimination of some trades. Where other official confirmation has not been found (e.g. in the Army Trades Committee files), this file has been accepted as an authority. Short reference in this document: [LAC - Policy - Training of Tradesmen, RCEME]

Army Trades Committee and Army Trades Committee Sub-committee files at the LAC. A specific series of files at the LAC are the minutes of the Army Trades Committee and Army Trades Committee Sub-committee from about 1950 to 1965. They are best located by using the LAC search engine. The minutes give the approval (and date) for trade actions, and are often accompanied by supporting documentation such as trades specifications. Short reference in this document: [LAC - ATC and LAC - ATCSC]. The Directorate of History and Heritage also has a copy of some of these files. Between DHH and the LAC, there should be a complete set.

Files in the RCEME Archives. The RCEME archives, currently located at the RCEME School, have a few trades files. Most date from the early 1960s. There is a separate list ing of all the files in the RCEME archives. Short reference in this document: [RCEME Archives].

Bennett, Thomas J. **Skill at Arms, A History of Canadian Army Trades including their Badges and Parachute Wings**. Bunker to Bunker Books, Calgary, AB, 2005. The book appears to be out of print. A copy is in the Canadian War Museum Library under the call number UC 535 C3 B458 2005. Short reference in this document: [Skill at Arms]. It is an outstanding reference work, and was used heavily in the creation of the first draft of this document. However, unfortunately it does not link to primary

sources, and has been replaced as a source document as primary sources become available. That said, few discrepancies have been found, and I have full confidence in this book as a source. It was my primary reference for relating the badges worn by the trades.

RCEME Historical Database. Documents of general and specific interest to RCEME have been placed on a Google drive, part of which is shared with the public. All files in the public section of the database can be downloaded. The database can be accessed through the history and heritage tab on the Corps of RCEME website. Supporting documentation is in the RCEME Complete Digital Archives on the same Google Drive. The supporting documentation (such as the raw document scans) is not available to the general public, but can be requested from the RCEME Historian if required. Short reference in this document: [RCEME Historical Database].

RCEME Trades Source Documents at the LAC (Postwar and Pre-Unification)

The following Policy of Training and Qualifications files have been located at the LAC. All files have been reviewed and relevant details, including trades specifications, have been photographed and a pdf file of the information has been created and placed on the RCEME Historical Database. In general, the information contained in the files is limited to a copy of the draft trades standard. It is a disappointing source, but provides an index to the trades that were in existence.

Policy of Training and Qualifications - Artificers 1951-1961. [LAC Reference: RG24-C-1-c, Volume/box number 31348, File number 3202-A15.]

Policy of Training and Qualifications - Body Repairman 1952-1959. [LAC Reference: RG24-C-1-c, Volume/box number 31348, File number 3202-B22.]

Policy of Training and Qualifications - Driver Mechanics (Wheeled) 1956-1958. [LAC Reference: RG24-C-1-c, Volume/box number 31349, File number 3202-D22/2.]

Policy of Training and Qualifications - Driver Mechanics (Tracked) 1950-1956. [LAC Reference: RG24-C-1-c, Volume/box number 31349, File number 3202-D22/1.]

Policy of Training and Qualifications - Electrical Mechanic 1955-1960. [LAC Reference: RG24-C-1-c, Volume/box number 31362, File number 3202-E14.]

Policy of Training and Qualifications - Fire Control System Technician (AA) 1955-1959. [LAC Reference: RG24-C-1-c, Volume/box number 31362, File number 3202-F9.]

Policy of Training and Qualifications - Fitters 1949-1950. [LAC Reference: RG24-C-1-c, Volume/box number 31362, File number 3202-F18.]

Policy of Training and Qualifications - Instructors (RCEME) 1950-1955. [LAC Reference: RG24-C-1-c, Volume/box number 31363, File number 3202-J2/7.]

Policy of Training and Qualifications - Instrument Technician 1950-1959. [LAC Reference: RG24-C-1-c, Volume/box number 31362, File number 3202-J11.]

Policy of Training and Qualifications - Machinist Fitter 1951-1962. [LAC Reference: RG24-C-1-c, Volume/box number 31363, File number 3202-M2/1.]

Policy of Training and Qualifications - Machinist (Metal) 1946-1965. [LAC Reference: RG24-E-1-c, Volume/box number 32842, File number 450-M1. RCAF file.]

Policy of Training and Qualifications - Master Vehicle Technicians 1954-1958. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-V8/M.]

Policy of Training and Qualifications - Master Weapons Technician 1955-1958. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-W8/M.]

Policy of Training and Qualifications - Projectionist Clerk. [LAC Reference: RG24-C-1-c, Volume/box number 31368, File number 3202-P49.]

Policy of Training and Qualifications - Radar Technician 1951-1954. [LAC Reference: RG24-C-1-c, Volume/box number 31368, File number 3202-R3.]

Policy of Training and Qualifications - Radio Technician 1955-1960. [LAC Reference: RG24-C-1-c, Volume/box number 31368, File number 3202-R12.]

Policy of Training and Qualifications - Recovery Mechanic 1953-1954. [LAC Reference: RG24-C-1-c, Volume/box number 31368, File number 3202-R11.]

Policy of Training and Qualifications - Tire Repairman 1952-1954. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-T18.]

Policy of Training and Qualifications - Typewriter Mechanics 1952-1956. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-T30.]

Policy of Training and Qualifications - Vehicle Mechanics 1950-1961. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-V6.]

Policy of Training and Qualifications - Vehicle Mechanics 1961-1963. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-V6.]

Policy of Training and Qualifications - Watchmaker 1952-1956. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-W4.]

Policy of Training and Qualifications - Weapons Technician 1954-1958. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-W8.]

Policy of Training and Qualifications - Welders 1952-1956. [LAC Reference: RG24-C-1-c, Volume/box number 31369, File number 3202-W6.]

Instrument Artificer
Group 4, 1954

FILE NUMBER 1200-T3-1 VOL. 1

C R 117
100M-12-49 (2973)
HQ 200-115-CR 117

DEPARTMENT OF NATIONAL DEFENCE ARMY

SUB-COMMITTEE OF THE

ARMY TRADES COMMITTEE

DEAD

DEAD

FOR CROSS REFERENCES SEE INSIDE COVER

REFERRED	FOR REMARKS	DATE OF PASS	INITIALS	DATE OF P.A.	INITIALS	DATE OF B.F.	CENTRAL REGISTRY	INSPECTED IN C.R. BY
D Mt V	NEW FILE CR NOV 2 5 1950			5 Mar 52			MAR 6 1952	V

VOL. 1

FILE NUMBER 1200-T3-1

ARMY HEADQUARTERS

HQ 1200-T3-1 (Trg T&A)

OTTAWA, 5 May 54

The 47th Meeting of the Sub-Committee of the
Army Trades Committee
will be held
in Room 3542, "A" Bldg, National Defence Headquarters
on Thursday, 13 May 54 at 0900 hours.

(E.W. Cutbill) Lt-Col
Chairman
Sub-Committee of the Army Trades
Committee

4388

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AGENDA

SUBJECT

Clerk Accounting (RCAMC) Groups 2 and 3
(Sponsor DGMS)

Introduction of the re-written specification for the trade of Clerk Accounting (RCAMC) Groups 2 and 3. It differs from the former specification as follows:

(a) Method of qualification now requires specific functions for each group rather than allowing alternative functions for qualification.

(b) Group 3 qualification requires a trade test in addition to certification of proficiency by the Commanding Officer.

The proposed specification is at Appendix "A".

Item 2 Despatcher Air Supply Group 1
(Sponsor DST)

Introduction of the re-written specification for the specialty of Despatcher Air Supply Group 1. It differs from the former specification as follows:

(a) The sub-function requiring the use of a load adjuster for calculating load distribution has been deleted.

(b) Functions on monorail and rigging for heavy drops have been added because of the introduction of new equipment.

The proposed specification is at Appendix "B".

Item 3 Steward Groups 1 and 2

Introduction of the proposed specification for the new trade of Steward Groups 1 and 2.

This proposed trade will apply to mess orderlies, barmen, sergeants' mess caterers and officers' mess stewards.

The proposed specification is at Appendix "C".

Item 4 Field Engineer Groups 1,2,3 and 4
(Sponsor CE)

Introduction of the re-written specification for the specialty of Field Engineer Groups 2,3 and 4. It differs from the former specification in that group 1 has been added to include the functions at present carried out by the Pioneer (RCE) Group 1. The latter specialty is recommended for deletion.

The proposed specification is at Appendix "D".

Control Equipment Electrician Groups 1,2 and 3
(Sponsor DEME)

Introduction of the proposed specification for the new trade of Control Equipment Electrician Groups 1, 2 and 3.

This trade will cover the repair and maintenance of the 90mm AA gun, remote control equipment, the computer and plotting board and the M33 radar and other associated equipment of the 90mm battery. This trade combines some of the mechanic skill of an instrument mechanic and some of the electronic knowledge of the radar mechanic. There is no comparable single trade now authorized combining these skills and knowledge. The tradesman will be responsible, under minimum supervision, for adjusting, overhauling, repairing and modifying AA fire control equipment and other components.

The proposed specification is at Appendix "Q".

Item 20 Control Equipment Artificer Group 4
(Sponsor DEME)

Introduction of the proposed specification for the new trade of Control Equipment Artificer Group 4.

This new trade will progress from the Control Equipment Electrician and includes the additional skills and knowledge required of an artificer in that trade. The tradesman will be responsible, under minimum supervision, for the operation of a workshop section and the training and supervision of junior tradesmen.

The proposed specification is at Appendix "R".

Item 21 Electrical Mechanic Groups 1,2 and 3
(Sponsor DEME)

Introduction of the re-written specification for the trade of Electrical Mechanic Groups 1,2 and 3. It differs from the former specification as follows:

(a) Sub-functions have been added to include the additional theoretical and practical knowledge and skills for the maintenance and repair of the electronic control system of the Centurian tank.

(b) Reference to searchlights have been deleted. This function will be treated as a special equipment course for those tradesmen requiring it.

The proposed specification is at Appendix "S".

.2 Electrical Artificer Group 4
(Sponsor DEME)

Introduction of the re-written specification for the trade of Electrical Artificer Group 4. There are no significant changes from the former specification.

The proposed specification is at Appendix "T".

Item 23 Instrument Mechanic Groups 1,2 and 3
(Sponsor DEME)

Introduction of the re-written specification for the trade of Instrument Mechanic (Optical) Groups 1, 2 and 3. It differs from the former specification as follows:

(a) The word "optical" has been deleted from the trade name as the trade of Instrument Mechanic (Electrical) is to be deleted and it will no longer be necessary to differentiate between the two types of mechanics.

(b) The following sub-functions have been added:

(i) General knowledge of cameras.

(ii) Mechanical operation of motion picture projectors.

(iii) Speedometers and tachometers.

(iv) Lock and safe mechanisms.

(v) Meteorological instruments.

The proposed specification is at Appendix "U".

Item 24 Instrument Artificer Group 4
(Sponsor DEME)

Introduction of the re-written specification for the trade of Instrument Artificer (AA) Group 4. It differs from the former specification in that the name has been changed to delete "AA". There are no other significant changes.

The proposed specification is at Appendix "V".

Appendix "V"

Effective Date:

SPECIFICATION FOR ARMY TRADES AND SPECIALTIES

INSTRUMENT ARTIFICER GROUP 4

1. CLASSIFICATION

1.1 Full Title

Instrument Artificer Group 4

2. SUMMARY

2.1 Supervises a workshop section in the repair and overhaul of optical and mechanical instruments. Inspects and reports on the maintenance and condition classification of these equipments.

3. DUTIES AND TASKS

3.1 Trade Duties

.1 Assists in planning section work loads and keeping section records.

.2 Recommends the repair or condemnation of equipments, taking into consideration the scope and class of repair, availability of parts and labor, repair facilities and cost.

.3 Inspects unit equipment, assigns condition classifications and maintenance gradings, and prepares summaries of inspections.

.4 Advises user units on the maintenance, unit repair and backloading of optical and mechanical instruments.

.5 Prepares misuse reports and provisional condemnation certificates.

.6 Advises on all technical matters concerning equipments applicable to his trade and prepares summaries of investigations.

.7 Supervises a workshop section in the repair and modification of optical and mechanical instruments.

.8 Carries out final testing and inspection of all optical and mechanical instruments.

.9 Carries out all optical and mechanical repairs, tests and adjustments to precision instruments such as theodolites and flash spotting instruments.

.10 Reports on equipment failures and recurring breakdown of components and suggests remedial action.

.11 Designs and manufactures jigs, fixtures, test panels and substitute parts.

.12 Devises methods of testing and repairing equipments for which no technical information exists.

.13 Uses and interprets technical manuals and text books.

.14 Instructs junior tradesmen in the performance of their duties and assesses their ability.

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INSTRUMENT ARTIFICER GROUP 4

3.2 Regimental Duties

.1 See Part II of the manual, Detailed Instructions Relating to Trades and Specialties, paragraph 8.

4. TRAINING, EXPERIENCE, SKILLS AND KNOWLEDGE REQUIRED

4.1 The skills and knowledge required by personnel employed at this trade are broken down into functions.

GROUP 4

4.2 The Instrument Artificer Group 4 requires a knowledge of, and training and experience in, the following functions to enable him to perform his duties under minimum supervision:

Serial	Function
1	Technical Administration
	.1 Writing technical reports and instructions.
	.2 Estimating and costing.
	.3 Preparing spare parts scales.
	.4 Workshop layout.
	.5 Production line methods.
	.6 Modification and design change procedures.
	.7 Section accounting procedures.
	.8 The EME manual and RCEME Corps Instructions.
2	Repair and Overhaul
	.1 Preparing mechanical sketches and circuit diagrams.
	.2 Silvering of optical components.
	.3 Cementing of complex prism combinations.
	.4 General application and uses of fire control instruments.
	.5 Detailed knowledge of equipments applicable to the trade.
	.6 General knowledge of watches, clocks and office machinery.
	.7 Lubrication, preservation, desiccation and sealing procedures.
	.8 Repair and overhaul procedures.
	.9 The Corps repair policy.
	.10 Scope of other Corps trades.
	.11 Advanced fault finding.
	.12 Electrical theory related to fire control instruments.
3	Testing and Adjusting
	.1 Optical test equipment.
	.2 Angle measuring test equipment.
	.3 Test methods.
	.4 Optical and mechanical instruments.
4	Inspecting
	.1 Responsibilities of an inspection team.
	.2 Inspection team procedures.
	.3 Inspection forms and returns.

1200-23-1

INSTRUMENT ARTIFICER GROUP 4

5. RESPONSIBILITY

5.1 An Instrument Artificer is responsible under minimum supervision for the overhaul, repair, test and adjustments of all optical and mechanical instruments and the supervision of work performed in an Instrument Section.

6. WORKING CONDITIONS

6.1 Duties are normally performed in a clean, warm, well-lighted workshop section.

6.2 Hazards involve exposure to minor injuries such as cuts and abrasions, and occasional exposure to chemical fumes and acid burns.

7. METHOD OF QUALIFICATION

7.1 Qualification for Group 4

.1 In order to qualify as an Instrument Artificer Group 4, the candidate must be an Instrument Mechanic Group 3, and have passed;

.1 A RCEME senior non-commissioned officers course

.2 A pre-artificer assessment authorized by Army Headquarters.

.2 Qualification may then be obtained by passing a course authorized by Army Headquarters.

.3 The scope of the pre-artificer assessment will be detailed by Army Headquarters.

.4 The scope of the course will include the functions listed in paragraph 4.2.

8. CAREER POSSIBILITIES

8.1 An Instrument Artificer Group 4 does not normally progress to any other trade or specialty.

8.2 Advancement in rank is governed by regulations laid down by the Adjutant-General.

9. RELATED OCCUPATIONS

9.1 Navy - Control Armourer Group 4

9.2 Air Force - None

9.3 Civilian -

	Dictionary of Occupational Titles Code Number
Instrument Foreman	4-75.130

1200-73-

Instrument Artificer
Group 4, 1957

FILE NUMBER 1200-T3 VOL. 5

DEPARTMENT OF NATIONAL DEFENCE

ARMY TRADES COMMITTEE

FOR CROSS REFERENCES SEE INSIDE COVER

ROUTING				P.A. AND B.F. ENTRIES				REGISTRY ONLY	
REFERRED	REMARKS	Date of Pass	Initials	Date of P.A.	Initials	Date of B.F.	Cancel B.F	Date Received	Inspected by
DMT	[illegible]	2/11/57	[illegible]						720
DOS(PT)	[illegible]	7 3 57	[illegible]						
DMT	Returned	7 3 57	[illegible]						
CR	pls return	21/10/57	[illegible]						
[illegible]	WITH PAPERS CR OCT 22 1957		[illegible]						A 20
DST	pls return	6 Nov 57	[illegible]						
DMT	Returned thanks	7 Nov 57	[illegible]						
DMC	Pls Return	21 Nov 58	[illegible]	21-3-58	[illegible]				
DMT	Returned	21-4-58-9							
DSD	Pls Return	23 Jan 59	[illegible]	23 Jan 59					
DMT	Returned thanks	23 Jan 59	7m						
DSD	Pls Return	3 Jul 59	[illegible]	[illegible]					
DMT	Returned thanks	3 Jul 59	[illegible]						
DOrg	Req - pls return	16-3-60	[illegible]						
DMT	Returned thanks	17/ [illegible]	[illegible]						
DOrg	Pls Req	17/5/60	[illegible]						
DMT	Returned	23/ [illegible]	[illegible]	7/11/60	[illegible]				H 20

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FILE NUMBER 1200-T3

VOL.

"B. F." — DO NOT HOLD THIS FILE WHEN LAPSES IN ACTION MAY EXCEED 48 HOURS

ARMY
CR-PA

MEMORANDUM

HQ 1200-T3-1 (MT 2D)

27 Nov 57

Sub-Committee of the Army Trades Committee
Minutes - 83rd Meeting

1. The 83rd Meeting was held in Room 352h, "A" Bldg., on Tuesday, 26 Nov 57, at 1000 hrs.

2. The following attended:

A/Chairman	-	Maj SA Nicol	DMT
Members	-	Maj KC Pennie	D Org
		Capt WM Jessup	DQOP
Sponsors	-	Maj IR Greene	D Sigs
		Capt WJN Haggins	DEME
		Capt JR Caron	D Pay

3. Attention is directed to the agenda issued under cover of HQ 1200-T3-1 (MT 2D) dated 19 Nov 57, and HQ 1200-T3-1 (MT 2D) dated 21 Nov 57.

ITEM	SUBJECT	ACTION BY
1.	Minutes - 82nd Meeting Approved.	
2(a)	Instrument Technician Groups 1, 2 and 3 Consideration was given to the re-written and renamed specification for the existing trade of Instrument Mechanic Optical Groups 1, 2 and 3. There are no major changes in the overall knowledge and skills required. There are no financial implications. The proposed specification was approved for submission to ISTC.	D Org
2(b)	Instrument Artificer Group 4 Consideration was given to the re-written specification for the existing trade of Instrument Artificer Group Field Group 4. There are no major changes in the overall skills and knowledge required. It is proposed to delete the present trade of Instrument Artificer HD&AA (see ITEM 3) leaving only one Instrument Artificer trade. The modifying word Field has been dropped from the trade name. There are no financial implications.	D Org

.../2

ITEM	SUBJECT	ACTION BY

The proposed specification was approved for submission to ISTC.

2(c) **Pay Clerk Groups 1, 2 and 3** — D Org

Consideration was given to the re-written specification for the existing trade of Clerk Accounting Pay Groups 1, 2 and 3.

The specification has been revised to include the training references and has been written in greater detail. The name has been changed to that commonly used in the Corps.

There are no changes in the duties performed, the skills and knowledge required, or the method of qualification. There are no financial implications.

The proposed specification was approved for submission to ISTC.

2(d) **Teletype Operator Groups 1 and 2** — D Org

The ISTC, at meeting 5/57, approved a proposed specification for Teletype Operator Groups 1 and 2 but rejected the proposed specification for Teletype Supervisor Group 3.

Certain skills and knowledge appearing in the proposed specification for Teletype Supervisor Group 3 are required in the trade of Teletype Operator making it necessary to revise the specification for this trade.

Consideration was given to the revised specification for Teletype Operator Groups 1 and 2.

There are no financial implications.

The proposed specification was approved for submission to ISTC.

3. **Instrument Technician HD&AA Group 3**
Instrument Artificer HD&AA Group 4 — Secretary

Consideration was given to the deletion of Instrument Technician HD&AA Group 3 and Instrument Artificer HD&AA Group 4 from the list of authorized trades.

There is no longer a requirement for tradesmen to be trained on Harbour Defence fire control instruments. There are only two equipments left in use which are obsolescent, with the probability that in two years even they will be discarded.

.../3

ITEM	SUBJECT	ACTION BY

The AA equipment for which these tradesmen were trained, namely the 3.7" AA FCI equipment, is now obsolete and no longer in use.

The proposed deletions were approved for submission to ATC.

(WHV Matthews) Lt-Col
Chairman
Sub-Committee of the Army Trades Committee

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HQ 1200-T3 (MT 2D)

19 Dec 57

Army Trades Committee
Minutes - 160th Meeting

1. The 160th Meeting of the Army Trades Committee was held in Room 3524, "A" Bldg., on 11 Dec 57, at 0930 hrs.

2. The following attended:

A/Chairman	-	Lt-Col WHV Matthews	DMT
Members	-	Lt-Col LPP Payan	DSD
		Lt-Col PCR Black	D Org
		Maj GS Foggo	DQOP
Sponsors	-	Lt-Col RH Noble	DMI
		Maj ET Galway	CE
		Maj RH Hodson	DEME
		Capt RHJ Rowntree	D Sigs
Secretary	-	Maj SA Nicol	DMT

ITEM	SUBJECT	ACTION BY
1	Minutes - 159th Meeting Approved.	
2	Instrument Artificer Har Def & AA Instrument Mechanic Har Def & AA Machinist Wood Sponsor - DEME Consideration was given to the deletion of these trades, and the amendment of the Canadian Army Manual of Trades and Specialties to this effect. The Committee approved this proposal.	D Org
3	Driver-Radio Operator Groups 1 and 2 Sponsor - D Sigs Consideration was given to the proposed specification for this trade which is designed to replace Driver-Operator Group 1. Subject to provision being made for the additional 106 group 2 positions within the trade group ceiling, the proposed specification was approved for submission to ISTC.	DSD D Org

new OK.

MT 2

ED DANBY
COLONEL D M T

.../2 DEC 19 1957

Instrument Artificer
Group 4, 1958

Instrument Artificer Group 4

Army Trade Specification J.35

1. Classification

1.1. Code

Full Title	Abbreviation	Number
Instrument Artificer Group 4	Inst Art Gp 4	3924

2. Summary

2.1.1. Supervises a workshop section in the repairing and rebuilding of optical and mechanical instruments. Inspects and reports on the maintenance and condition of these equipments.

3. Duties and Tasks

3.1.1. Assists in planning section work loads and keeps section records.

3.1.2. Recommends the repair or condemnation of equipments, taking into consideration the scope and class of repair, availability of parts and labour, repair facilities and cost.

3.1.3. Inspects unit equipment, assigns condition classifications and maintenance gradings, and prepares summaries of inspections.

3.1.4. Advises user units on the maintenance, unit repair and back-loading of optical and mechanical instruments.

3.1.5. Prepares abnormal condition and equipment failure reports and provisional condemnation certificates.

3.1.6. Advises on all technical matters concerning equipments applicable to his trade.

3.1.7. Supervises a workshop section in the repair, rebuild and modification of optical and mechanical instruments.

3.1.8. Carries out final testing and inspection of optical and mechanical instruments.

3.1.9. Carries out all optical and mechanical repairs, tests and adjustments to precision instruments such as theodolites, flash spotting instruments and rangefinder sights.

3.1.10. Designs and manufactures jigs, fixtures and special tools.

3.1.11. Devises methods of testing and repairing equipments for which no technical information exists.

3.1.12. Uses and interprets technical manuals and text books.

3.1.13. Instructs junior tradesmen in the performance of their duties.

4. Training, Experience, Skills and Knowledge Required

4.1. The tradesman requires the skills and knowledge described in this specification. The degrees of skill and knowledge will be determined from the references listed. To qualify, he must reach the level shown but not any higher level.

4.2. Normally the reference material shown below will be used for instructional purposes but other suitable material may be substituted when necessary.

AEM - Applicable equipment manual.

CAO - Canadian Army Orders.

DCE - CAMT 2-82 Principles of Electricity.

EME - Canadian Army Electrical and Mechanical Engineering Manual.

ENO - Elementary Notes on Optics and their Application to Service Instruments - HM Stationery Office - 1941.

EOA - U.S. Technical Manual - TM 9-2601 - Elementary Optics and Applications to Fire Control Instruments - April 1945.

HRL - How to Run a Lathe - Volume 1 - 53rd Edition - South Bend Lathe Co. Ltd.

MSP - Machine Shop Theory and Practice - Wagner and Arthur - second Edition - 1950.

MTS - Canadian Army Manual of Trades and Specialties.

OTE - U.S. Technical Manual - TM 9-9620-14 - Pre operational Procedures and Maintenance: Optical Test Equipment (For anti-aircraft Fire Control System M33/T33 Series).

RSP - RCEME School Precis.

Group 4

4.3. In addition to the requirements for an Instrument Technician Group 3, and to perform his duties satisfactorily, the group 4 tradesman must:

4.3.1	Know the following optical theory:	References
4.3.1.1	Theory of refraction.	ENO: pp 31 to 41.
4.3.1.2	Concave and cylindrical lenses.	ENO: pp 61 to 64.
4.3.1.3	Principles of instrument optical systems.	ENO: chap 9.
4.3.1.4	Dispersion and colour in optical components.	ENO: chap 2.
4.3.2	Be able to replace spider webs or fine-wire crosswires.	ENO: p 92 & fig 92.

4.3.3	Be able to calculate focal lengths of convex and concave lenses using the optical bench method.	ENO: pp 61 & 62.
4.3.4	Be able to recognize lens defects and aberrations and correct certain faults.	EOA: paras 39 to 49.
4.3.5	Know the principles of electricity.	DCE: parts 1 & 2.
4.3.6	Be able to use a precision lathe to:	
4.3.6.1	Cut multiple start threads.	HRL: p 86.
4.3.6.2	Cut worms.	HRL: p 83.
4.3.6.3	Turn and bore eccentrics.	HRL: pp 88 & 106.
4.3.7	Be able to set-up work on a milling machine, and plain mill and cut keyways and slots.	RSP: nos. 2-7-1 to 2-7-4 and MSP: pp 150 & 152 to 154.
4.3.8	Be able to set-up work on a shaper and do parallel, square and angular shaping.	RSP: nos. 2-8-1 to 2-8-5 and MSP: pp 42 to 50.
4.3.9	Know the principles of inspecting and testing:	
4.3.9.1	Telescopic systems.	EME: Insts A190.
4.3.9.2	Rangefinders.	EME: Insts A191.
4.3.9.3	Angle measuring instruments.	EME: Insts A192.
4.3.10	Be able to repair, test and adjust all optical and other instrument test equipment.	AEM.
4.3.11	Be able to inspect, disassemble, repair, reassemble, test and adjust:	
4.3.11.1	Rangefinder-sights.	EME: Insts M150.
4.3.11.2	Theodolites.	EME: Insts B013, B043, B046, B722 to B724, B732 to B734, B762 to B764 & B792 to B794.
4.3.11.3	Instruments Flash Spotting	
4.3.11.4	Microscopes.	none.
4.3.11.5	M33 radar periscopes.	OTE.
4.3.12	Be able to separate and re-cement coincidence rangefinder centre prism assemblies.	EME: Insts M134 paras 76 to 91.

4.3.13	Be able to prepare:	
4.3.13.1	Summaries of inspections.	EME: Stat Ops H101.
4.3.13.2	Abnormal condition reports.	EME: Stat Ops H651.
4.3.13.3	Equipment failure reports.	EME: Stat Ops H601.
4.3.13.4	Provisional condemnation certificates.	EME: Stat Ops H551.
4.3.13.5	Technical briefs, papers and appreciations.	EME: Stat Ops E050.
4.3.14	Be able to use parts lists, scales documents and other technical publications for repair procedures, details of modifications and the identification and ordering of parts.	EME: Gen A003 & Stat Ops S010 and CAO: nos. 225-9 & 225-35.
4.3.15	Be able to estimate labour and parts required to repair an equipment.	CAO: no. 93-1.
4.3.16	Know ordnance accounting procedure for tools and equipment.	EME: Stat Ops J100.
4.3.17	Know:	
4.3.17.1	The general scope of other RCEME trades.	MTS.
4.3.17.2	Modification procedures.	EME: Stat Ops H500 to H504.
4.3.17.3	The division of responsibility for maintenance and repair of equipment.	EME: Stat Ops B112 to B114, B118, B119, H042 & H073.
4.3.17.4	The duties and responsibilities of RCEME inspection teams.	EME: Stat Ops H101 & H103.
4.3.17.5	The principles of organization and the functions of management.	RSP: no. 0-5-1.
4.3.17.6	The procedures for maintaining good personnel relations and the effective utilization of personnel.	RSP: no. 0-5-2.
4.3.17.7	The methods of improving the conditions of work and making the best use of manpower, material and workshop equipment available.	RSP: nos. 0-5-3 & 0-5-5.
4.3.17.8	The methods used for injob training and how to assess and record progress.	RSP: no. 0-5-4.

5. Responsibility

5.1. An Instrument Artificer Group 4 is responsible, under minimum supervision, for the rebuild, repair, test and adjustment of all optical and mechanical instruments and the supervision of work performed in an instrument section.

6. Working Conditions

6.1. Physical

6.1.1. Duties are normally performed in a clean, warm and well- lighted workshop section.

6.2. Stresses

6.2.1. Mental stress is normal but becomes moderate when making fine optical adjustments.

6.3. Occupational Hazards

6.3.1. Hazards include eyestrain, exposure to minor injuries such as cuts and abrasions, and occasional exposure to chemical fumes and acid bums.

7. Method of Qualification

7.1. Qualification for Group 4

7.1.1. To qualify as an Instrument Artificer Group 4, the candidate must be qualified as an Instrument Technician Group 3 and

7.1.1.1. Have passed a RCEME senior non-commissioned officers' course; and

7.1.1.2. Have successfully completed a period of assessment at the RCEME School which test his proficiency as an Instrument Technician and his ability to absorb instruction at the levels indicated in paragraph 4.3 of this specification.

7.1.2. Qualification may then be obtained by passing a course authorized by Army Headquarters.

7.1.3. The scope of the course will include the requirements of paragraph 4.3 of this specification.

Effective Date: 1 Apr 58

Instrument Mechanic
Re-qualification, 1950

ARMY HEADQUARTERS

HQ 3666-J10/1 (Trg 2)
HQ 3666-J10/2

OTTAWA, 31 May 50.

Re-qualification of Tradesmen

1 The trade specification for the trades of Instrument Mechanic (Electrical) and (Optical) require personnel to undergo a course to obtain Group 3 qualification. However, it will not be possible to conduct courses for Group 3 in either of these trades before 1 Oct 50.

2 In view of the above, and in order that personnel will not be penalized, arrangements have been made to have personnel write a special examination to be set by Army Headquarters. Successful candidates will be shown as qualified to Canadian Army Trade Specifications.

3 Commands are requested to advise this Headquarters of the numbers of personnel who require to be re-qualified in order that the necessary papers may be forwarded so that examinations will be completed by Sep 50.

T. C. Foulkes Lt Col

(Charles Foulkes)
Lieutenant-General
Chief of the General Staff

DHP/4388/var

DISTRIBUTION

All Commands

Instrument Mechanic
Group 1 & 2 & 3, 1954

FILE NUMBER 1200-T3-1 VOL. 1

C R 117
100M-12-49 (2973)
HQ 200-115-CR 117

DEPARTMENT OF NATIONAL DEFENCE ARMY

SUB-COMMITTEE OF THE

ARMY TRADES COMMITTEE

DEAD

DEAD

FOR CROSS REFERENCES SEE INSIDE COVER

REFERRED	FOR REMARKS	DATE OF PASS	INITIALS	DATE OF P.A.	INITIALS	DATE OF B.F.	CENTRAL REGISTRY	INSPECTED IN C.R. BY
D Mt V	NEW FILE CR NOV 2 5 1950			5 Mar 52			MAR 6 1952	V

VOL. 1

FILE NUMBER 1200-T3-1

ARMY HEADQUARTERS

HQ 1200-T3-1 (Trg T&A)

OTTAWA, 5 May 54

The 47th Meeting of the Sub-Committee of the
Army Trades Committee
will be held
in Room 3542, "A" Bldg, National Defence Headquarters
on Thursday, 13 May 54 at 0900 hours.

(E.W. Cutbill) Lt-Col
Chairman
Sub-Committee of the Army Trades
Committee

4388

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AGENDA

SUBJECT

Clerk Accounting (RCAMC) Groups 2 and 3
(Sponsor DGMS)

Introduction of the re-written specification for the trade of Clerk Accounting (RCAMC) Groups 2 and 3. It differs from the former specification as follows:

(a) Method of qualification now requires specific functions for each group rather than allowing alternative functions for qualification.

(b) Group 3 qualification requires a trade test in addition to certification of proficiency by the Commanding Officer.

The proposed specification is at Appendix "A".

Item 2 Despatcher Air Supply Group 1
(Sponsor DST)

Introduction of the re-written specification for the specialty of Despatcher Air Supply Group 1. It differs from the former specification as follows:

(a) The sub-function requiring the use of a load adjuster for calculating load distribution has been deleted.

(b) Functions on monorail and rigging for heavy drops have been added because of the introduction of new equipment.

The proposed specification is at Appendix "B".

Item 3 Steward Groups 1 and 2

Introduction of the proposed specification for the new trade of Steward Groups 1 and 2.

This proposed trade will apply to mess orderlies, barmen, sergeants' mess caterers and officers' mess stewards.

The proposed specification is at Appendix "C".

Item 4 Field Engineer Groups 1,2,3 and 4
(Sponsor CE)

Introduction of the re-written specification for the specialty of Field Engineer Groups 2,3 and 4. It differs from the former specification in that group 1 has been added to include the functions at present carried out by the Pioneer (RCE) Group 1. The latter specialty is recommended for deletion.

The proposed specification is at Appendix "D".

Control Equipment Electrician Groups 1,2 and 3
(Sponsor DEME)

Introduction of the proposed specification for the new trade of Control Equipment Electrician Groups 1, 2 and 3.

This trade will cover the repair and maintenance of the 90mm AA gun, remote control equipment, the computer and plotting board and the M33 radar and other associated equipment of the 90mm battery. This trade combines some of the mechanic skill of an instrument mechanic and some of the electronic knowledge of the radar mechanic. There is no comparable single trade now authorized combining these skills and knowledge. The tradesman will be responsible, under minimum supervision, for adjusting, overhauling, repairing and modifying AA fire control equipment and other components.

The proposed specification is at Appendix "Q".

Item 20 Control Equipment Artificer Group 4
(Sponsor DEME)

Introduction of the proposed specification for the new trade of Control Equipment Artificer Group 4.

This new trade will progress from the Control Equipment Electrician and includes the additional skills and knowledge required of an artificer in that trade. The tradesman will be responsible, under minimum supervision, for the operation of a workshop section and the training and supervision of junior tradesmen.

The proposed specification is at Appendix "R".

Item 21 Electrical Mechanic Groups 1,2 and 3
(Sponsor DEME)

Introduction of the re-written specification for the trade of Electrical Mechanic Groups 1,2 and 3. It differs from the former specification as follows:

(a) Sub-functions have been added to include the additional theoretical and practical knowledge and skills for the maintenance and repair of the electronic control system of the Centurian tank.

(b) Reference to searchlights have been deleted. This function will be treated as a special equipment course for those tradesmen requiring it.

The proposed specification is at Appendix "S".

.2 Electrical Artificer Group 4
(Sponsor DEME)

Introduction of the re-written specification for the trade of Electrical Artificer Group 4. There are no significant changes from the former specification.

The proposed specification is at Appendix "T".

Item 23 Instrument Mechanic Groups 1,2 and 3
(Sponsor DEME)

Introduction of the re-written specification for the trade of Instrument Mechanic (Optical) Groups 1, 2 and 3. It differs from the former specification as follows:

(a) The word "optical" has been deleted from the trade name as the trade of Instrument Mechanic (Electrical) is to be deleted and it will no longer be necessary to differentiate between the two types of mechanics.

(b) The following sub-functions have been added:

(i) General knowledge of cameras.

(ii) Mechanical operation of motion picture projectors.

(iii) Speedometers and tachometers.

(iv) Lock and safe mechanisms.

(v) Meteorological instruments.

The proposed specification is at Appendix "U".

Item 24 Instrument Artificer Group 4
(Sponsor DEME)

Introduction of the re-written specification for the trade of Instrument Artificer (AA) Group 4. It differs from the former specification in that the name has been changed to delete "AA". There are no other significant changes.

The proposed specification is at Appendix "V".

Appendix "U"

Effective Date:

SPECIFICATION FOR ARMY TRADES AND SPECIALTIES

INSTRUMENT MECHANIC GROUPS 1, 2 AND 3

1. CLASSIFICATION

1.1 Full Title

Instrument Mechanic Group 1
Instrument Mechanic Group 2
Instrument Mechanic Group 3

2. SUMMARY

2.1 Inspects, repairs, overhauls, tests and adjusts all types of optical and mechanical instruments.

3. DUTIES AND TASKS

3.1 Trade Duties

.1 Manufactures and refits parts of optical and mechanical instruments using hand and power tools and precision measuring instruments.

.2 Refinishes instruments by spray or hand painting, bronzing, bluing, silvering and filling scales.

.3 Interprets simple blueprints and makes sketches for the repair and manufacture of parts and modification of instruments.

.4 Overhauls optical systems by cleaning and replacing component lenses, prisms and mirrors, and cementing compound lenses.

.5 Inspects, tests, repairs and overhauls instruments such as binoculars, rangefinders and clinometers and such miscellaneous equipment as speedometers, vacuum and pressure gauges, locks and safe mechanisms.

.6 Tests and adjusts instruments using optical and mechanical test equipment.

.7 Repairs, overhauls and adjusts such instruments as theodolites, transits, and microscopes under direct supervision.

.8 Uses the EME manual, parts lists and other technical publications for repair procedures, details of modifications and the identification and ordering of parts.

.9 Instructs junior tradesmen in the performance of their duties.

3.2 Regimental Duties

.1 See Part II of the manual, Detailed Instructions Relating to Trades and Specialties, paragraph 8.

4. TRAINING, EXPERIENCE, SKILLS AND KNOWLEDGE REQUIRED

4.1 The skills and knowledge required by personnel employed at this trade are broken down by groups, into functions.

INSTRUMENT MECHANIC GROUPS 1, 2 AND 3

GROUP 1

4.2 The Instrument Mechanic Group 1 requires a knowledge of, and training and experience in, the following functions to enable him to perform his duties under direct supervision:

Serial	Function
1	**Bench Fitting**
	.1 Safety precautions. .2 Use and care of: .1 Hand tools. .2 Common measuring instruments. .3 Reading simple mechanical drawings. .4 Work layout. .5 Identification of metals. .6 Heat treatment of metals. .7 Tapping and threading. .8 Drilling. .9 Soldering.
2	**Machine Shop Practice**
	.1 Safety precautions. .2 Use and maintenance of power machinery. .3 Using: .1 An engine lathe. .2 A watchmaker's lathe. .4 Sharpening tools and tool bits. .5 Use of a locksmith's key cutting machine. .6 Use of an engraving machine.
3	**Refinishing**
	.1 Safety precautions. .2 Properties of primers, paints and lacquers. .3 Preparation of surfaces. .4 Use and care of brushes. .5 Bronzing and bluing. .6 Filling scales. .7 Lacquering.
4	**Repairing and Overhauling**
	.1 Principles of optics. .2 Simple optical systems of telescopes and binoculars. .3 Magnetism. .4 Use of lubricants and cleaning solvents. .5 Methods of repairing: .1 Locks and safe mechanisms. .2 Vacuum and pressure gauges. .3 Tachometers and speedometers. .4 Simple angle measuring instruments. .5 Simple sighting instruments. .6 Simple DC electrical circuits. .6 Methods of separating and cementing lenses. .7 Desiccating and sealing instruments. .8 Basic principles of DC electricity. .9 Principles and safety precautions relating to oxy-acetylene regulators.

1200-723-1

INSTRUMENT MECHANIC GROUPS 1, 2 AND 3

Serial	Function
5	Inspecting, Testing and Adjusting
	.1 Use of:
	.1 Collimators.
	.2 Instrument and tripod testing scales.
	.3 Sub-standard compass.
	.4 Desiccator.
	.5 Apparatus for testing oil pressure gauges.
	.6 Manometer.

GROUP 2

4.3 In addition to the requirements for group 1, a group 2 tradesman requires a knowledge of, and training and experience in, the following functions to enable him to perform his duties under general supervision:

Serial	Function
1	Bench Fitting
	.10 Filing.
	.11 Precision hand scraping.
	.12 Using precision measuring instruments.
	.13 Refitting of spindles and bearings.
	.14 Precision drilling of matched holes.
	.15 Press and shrink fitting.
	.16 Annealing, hardening and tempering.
	.17 Soldering techniques.
2	Machine Shop Practice
	.7 Taper turning.
	.8 Boring.
	.9 Internal and external thread cutting.
	.10 Facing.
	.11 Grinding with tool post grinder.
	.12 Polishing pivots.
	.13 Trueing shafts and spindles.
	.14 Engraving on curved surface.
	.15 Grinding of tool bits and cutters.
3	Refinishing
	.8 Bronzing and blueing.
	.9 Spray painting.
4	Repairing and Overhauling
	.10 Speedometers, tachometers.
	.11 Locks and safe mechanisms.
	.12 Vacuum and pressure gauges.
	.13 Mortar sights.
	.14 Binoculars.
	.15 Telescopes.
	.16 Compasses.
	.17 Clinometers.
	.18 Instrument mounts.
	.19 Separating and recementing of lenses.
	.20 Sealing and desiccating instruments.
	.21 Simple DC electrical circuits.

INSTRUMENT MECHANIC GROUPS 1, 2 AND 3

GROUP 3

4.4 In addition to the requirements for group 2, a group 3 tradesman must have a knowledge of, and training and experience in, the following functions to enable him to perform his duties under minimum supervision:

Serial	Function
1	Bench Fitting
	.18 Precision fitting by: .1 Filing. .2 Drilling. .3 Reaming. .4 Scraping. .5 Lapping.
	.19 Preparing mechanical drawings.
2	Machine Shop Practice
	.16 Milling machine. .17 Shaper. .18 Precision lathe work. .19 Grinder. .20 Precision inspection.
4	Repairing and Overhauling
	.22 Complex optical systems. .23 Angle measuring instruments (except theodolites and flash spotting instruments). .24 Rangefinders. .25 Surveyors levels. .26 Meteorological instruments. .27 General knowledge of cameras and associated equipment. .28 Mechanical portion of motion-picture projectors.
5	Inspecting, Testing and Adjusting
	.7 Test equipment. .8 Telescopic systems. .9 Rangefinders. .10 Surveyors levels. .11 Angle measuring instruments (except theodolites and flash spotting instruments). .12 Meteorological instruments. .13 Instrument mounts.
6	Administration
	.1 Workshop accounting procedures. .2 The EME Manual. .3 Technical publications. .4 Canadian ordnance catalogues.

INSTRUMENT MECHANIC GROUPS 1, 2 AND 3

5. RESPONSIBILITY

5.1 An Instrument Mechanic is responsible, under minimum supervision, for the inspection, test, repair and overhaul of optical and mechanical instruments.

6. WORKING CONDITIONS

6.1 Duties are normally performed in a clean, warm, well-lighted workshop.

6.2 Hazards involve exposure to minor injuries such as cuts and abrasions and occasional exposure to chemical fumes and burns.

7. METHOD OF QUALIFICATION

7.1 Qualification for Group 1

.1 Qualification may be obtained by one of the following methods:

.1 passing a course authorized by Army Headquarters,

.2 Passing a trade test when authorized by Army Headquarters.

.2 The scope of the course and trade test will include the functions listed in paragraph 4.2.

7.2 Qualification for Group 2

.1 In order to qualify as an Instrument Mechanic Group 2, the candidate must be an Instrument Mechanic Group 1.

.2 Qualification may then be obtained by passing a trade test authorized by Army Headquarters after having been certified proficient in the functions listed in paragraph 4.3. This certification will be made by his commanding officer with assessment by the appropriate representative of The Corps of Royal Canadian Electrical and Mechanical Engineers in the command, area or formation concerned, where the commanding officer is not a member of that Corps.

.3 The scope of the trade test will include the functions listed in paragraph 4.3.

7.3 Qualification for Group 3

.1 In order to qualify as an Instrument Mechanic Group 3, the candidate must be a qualified Instrument Mechanic Group 2.

.2 Qualification may then be obtained by one of the following methods:

.1 Passing a course authorized by Army Headquarters,

.2 Passing a trade test when authorized by Army Headquarters.

.3 The scope of the course and trade test will include the functions listed in paragraph 4.4.

INSTRUMENT MECHANIC GROUPS 1, 2 AND 3

8. CAREER POSSIBILITIES

8.1 An Instrument Mechanic may progress to Instrument Artificer if suitably qualified.

8.2 Advancement in rank is governed by regulations laid down by the Adjutant-General.

9. RELATED OCCUPATIONS

9.1 Navy - Control Armourer Group 3

9.2 Air Force - None

9.3 Civilian -

	Dictionary of Occupational Titles Code Number
Instrument Maker II	4-75.130
Instrument Man	7-83.920

Instrument Mechanic
(Harbour Defence & Anti-Aircraft)
Group 3, 1955

ARMY HEADQUARTERS,
OTTAWA, ONTARIO.
14 FEB 55.

Command EME,
Western Command,
EDMONTON, Alta.

Training Standards
Instrument Mechanic (HD & AA) Group 3

1. With the introduction of the 90mm (AA) gun and associated Fire Control equipment, also the latest Army policy regarding Harbour Defence equipments it has been found necessary to make certain sweeping changes in the trades of Inst Mech (elec), Inst Art (AA) and Inst Art (CD). These changes, now approved by the Interservice Trade Committee are as follows:

(a) the complete deletion of Instrument Artificer (CD);

(b) the renaming of Inst Art (AA) to include the CD function, or rather HD (Harbour Defence), as it is now known. This new trade will be known as Inst Art (AA and HD);

(c) the deletion of group 1, 2 and 3 Inst Mech (elec);

(d) the introduction, at the group 3 level only, of a new trade to be known as Inst Mech (AA and HD). These tradesmen will be produced by conversion course from Inst Mechs (E and O) group 2.

2. Trade specifications have now been approved for the two new trades mentioned under paras 1(b) and (d) above. Before courses can be run in these subjects however, comprehensive training standards indicating the exact depth of knowledge, lessons to be taught and references from which these lessons are taken, must be prepared.

3. To assist in the preparation of these training standards, it is requested that WO1 Wright be attached to DEME for a period of two to three weeks to work in conjunction with S/Sgt Davis and the DADEME (Trg). The dates for this attachment, if concurred in, will be the subject of further correspondence.

4. Attached hereto is a draft copy of the anti-aircraft portion of the group 3 standard, produced recently by the RCEME School. It is requested that these be passed to WO Wright for perusal, as it is the harbour defence portion of this and the artificer standard that he will be required to produce.

5. It is envisaged that the training on both these courses will be split between the RCEME School and the Harbour Defence sites. The students receiving approximately 20 weeks training at the school during which all the anti-aircraft subjects both theoretical and practical will be taught and as much of the theoretical harbour defence material

.../2

as is feasible on a lecture basis. The practical portions of the harbour defence subjects will be given either at Halifax or Vancouver on the actual harbour defence equipments.

6. ADEME (Armt) will be visiting the west coast next month and is anxious to discuss this problem with WO Wright who will by that time have prepared some notes and be in a position to discuss the problem.

7. The choice of references will be a problem and WO Wright should be warned to complete whatever research is possible in this direction before leaving for Ottawa.

8. On the subject of actual equipments ADEME,(Armt) advises that as a start we should consider the FCI controlling the 6 pounder twin 10 cwt and the 4-in twin (naval) converted, land service. The tradesmen will be responsible for all equipment from the radar information up to and including the range and bearing dials, also associated optical instruments. As mentioned earlier such serials as 1, 2 and 3 of the attached, which are common to both anti-aircraft and harbour defence equipments need not be rewritten in harbour defence portion of the standard.

9. Your concurrence in the attachment of WO Wright to Ottawa is requested, also suggested dates, preferably during the month of April 1955.

(J R Dunlop)
Colonel
Director of Electrical and Mechanical Engineering

JLS/4305

Instrument Mechanic (Optical)
Group 2, 1955

09696 T34

IN REPLY PLEASE QUOTE
NO. RS 3667-1(CI)

Department of National Defence

THE RCEME SCHOOL

1955 AUG 2 AM 8 42

KINGSTON, 28 Jul 55.

REFERED TO RCEME
DUE 3202-J10/2
CHG'D TO

Army Headquarters,
Dept of National Defence,
OTTAWA, Ontario.

Attn: ADEME(P & T)

Training Standard
Inst Mech (O) Gp 2

1. Enclosed are four draft copies of the marginally-noted training standard for your retention.

Enc

AAB/5501 L 7

(C W Jones), Colonel,
Commandant,
The RCEME School.

R.
O

C.A.F.A. 440
1000 M—1-54 (M-7332-20)
HQ. 4554-A-440

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANIC (OPTICAL) GROUP 2

AIM

1. To ensure that candidates are capable of carrying out the duties of an Instrument Mechanic (Optical) Group 2.

APPLICATION

2. The lessons that should be covered and the sections in the instructions or manuals of which a knowledge is required in order to reach each standard, are set out opposite the standard concerned.

3. The number of lessons thus indicated bears no relation to the number of periods which may be required to teach the lessons, ie, while some lesson require only one period of instruction to reach the standard required, others may require several periods.

4. The decision as to the number of periods necessary in any subject will be made by the officer directly concerned with the training in that subject.

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANIC (OPTICAL) GROUP 2

INDEX

SERIAL	SUBJECT
1	Bench Fitting
2	Machine Shop Practice
3	Optical Theory
4	Watchmaker's Lathe
5	Engraving Machine
6	Optical Workshop Practice
7	Telescopes
8	Binoculars
9	Compasses
10	Clinometers
11	Mortar Sights
12	Gauges
13	Tachometers and Speedometers
14	Instrument Stands and Mounts
15	Electrical Theory

NOTE: Personnel must be qualified Instrument Mechanic Group 1 before undertaking this standard.

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANIC (OPTICAL) GROUP 2

SERIAL	SUBJECT	STANDARD	REFERENCES
(a)	(b)	(c)	(d)
1	Bench Fitting	Must be able to:	
		(a) file flat and irregular surfaces (± .003),	EME Manual General
		(b) scrape flat and angular surfaces (± .003),	
		(c) scrape bearings,	Film OE 36
		(d) lay out work using vernier measuring tools and surface plates,	Essentials of Precision Inspection (Mollard) pages 49-57
		(e) drill matched holes to specified layout,	EME Manual General
		(f) harden, temper and anneal metal parts,	Elementary Forge Practice (Harcourt) pages 101-109
		(g) set up oxy-acetylene equipment,	Oxy-Acetylene Handbook (Linde) pages 75-91
		(h) silver solder.	Oxy-Acetylene Handbook (Linde) pages 386-390
2	Machine Shop Practice	Must be capable of:	
		(a) finish turning (± .001),	Lathe Work (Delmar) pages 25-28
		(b) calculating tapers,	Lathe Work (Delmar) pages 76-95
		(c) taper turning (± .001) using compound rest, taper attachment and tailstock set over methods,	Lathe Work (Delmar) pages 80-83
		(d) boring (± .001),	Lathe Work (Delmar) pages 134-136 Film OE 9
		(e) internal thread cutting,	Film OE 56
		(f) polishing metal parts in a lathe,	How to Run a Lathe (South Bend) page 89
		(g) trueing bent shafts and spindles.	How to Run a Lathe (South Bend) page 105
		Must be able to select grinding wheels and adjust tool post grinder for grinding metal parts in the lathe.	How to Run a Lathe (South Bend) page 105

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANIC (OPTICAL) GROUP 2

SERIAL	SUBJECT	STANDARD	REFERENCES
(a)	(b)	(c)	(d)
3	Optical Theory	Must know:	TM 9-2601
		(a) properties of light,	pages 2-10
		(b) reflection,	pages 10-15
		(c) refraction,	pages 15-25
		(d) image formation,	pages 25-35
		(e) colour,	pages 35-37
		(f) characteristics of optical systems,	pages 37-42
		(g) aberrations and other optical defects,	pages 42-52
		(h) binocular vision and stereo-vision,	pages 59-64
		(j) optical components,	pages 68-92
		(k) coated optics,	pages 92-96
		(l) general construction features.	pages 97-101
4	Watchmaker's Lathe	Must know the construction and use of the watchmaker's lathe.	The Watchmaker's Lathe and How to Use It (Donald de Carle) pages 3-16 and 19-62
		Must be able to:	
		(a) maintain, adjust and carry out minor repairs,	pages 17-19 and 90-97
		(b) sharpen gravers and cutters.	pages 63-70
		Must be capable of:	pages 57-63 and 70-90
		(a) parallel, radius and taper turning,	
		(b) facing and centering,	
		(c) drilling and boring,	
		(d) filing.	
5	Engraving Machine	Must know the construction and use of the Pantograph engraving machine and accessories.	Instruction Book and Parts Catalogue (Gorton Pantograph Machines)
		Must be able to:	
		(a) maintain, adjust and carry out minor repairs,	pages 3-7

LAPSES IN ACTION MAY EXCEED 48 HOURS

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANIC (OPTICAL) GROUP 2

(a)	SUBJECT (b)	STANDAPD (c)	REFERENCES (d)
		(b) set up pantograph ratios,	pages 23-29
		(c) set up and engrave plane and curved surfaces,	pages 29-30
		(d) use the roll attachment.	
6	Optical Workshop Practice	Must be able to:	EME Manual Instruments
		(a) clean optical components,	A274, A275 and A278
		(b) prepare surfaces for re-finishing,	A251/1
		(c) spray paint and lacquer surfaces,	A251/1 and A251/3
		(d) bronze and blue metal surf-aces,	A251/2
		(e) use lubricants and solvents,	A131
		(f) sharpen pivots,	D164
		(g) cement lenses and simple prism combinations,	A277
		(h) fill graticules,	A274 and A524/1
		(j) seal and desiccate in-struments,	A253 and X572/1
		(k) clean eyeguards,	A159
		(l) repair all types of reference marks,	Notes on Repair to FCI Part 41 pages 18-22
		(m) remove and replace lenses in cells,	Part 41 page 49
		(n) replace spirit bubbles,	Part 44 page 33
		(o) fill engraving.	Equipment Note REME Training Centre Serial No 5 pages 3-4
7	Telescopes	Must know the construction and use of all simple type telescopes.	EME Manual Instruments S540, S580 to S587 S620 to S624 T330/1 to T332/2, T410/2 T450/1 to T454/1
		Must be able to:	Notes on Repair to FCI Part 42
		(a) disassemble, clean and assemble,	EME Manual Small Arms C500-C501, C502 Inst 3 C503 Inst 9
		(b) test and adjust,	TM 9-1608
		(c) carry out mechanical repairs,	
		(d) refinish, seal and desiccate.	

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANIC (OPTICAL) GROUP 2

SERIAL	SUBJECT	STANDARD	REFERENCES
(a)	(b)	(c)	(d)
8	Binoculars	Must know the construction and use of the prismatic binoculars. Must be able to: (a) disassemble, clean and assemble, (b) test and adjust, (c) carry out mechanical repairs, (d) refinish, seal and desiccate.	EME Manual Instruments S140 to S157
9	Compasses	Must know the construction and use of prismatic compasses. Must be able to: (a) disassemble and assemble, (b) clean, (c) test and adjust, (d) carry out mechanical repairs, (e) seal and fill liquid compasses, (f) magnetize compass needles.	EME Manual Instruments D157 to D167, X712
10	Clinometers	Must know the construction and use of all types of clinometers. Must be able to disassemble, assemble, test, adjust and carry out mechanical repairs to all types of clinometers, with the exception of the Inspectors Clinometer. Note: This includes the electrical repairs required on Quadrants Elevation M9.	EME Manual Instruments B120 to B127, B160 to B164, B180 to B184 B120/1 to B124/1, B192 to B194 Notes on Repairs to FCI Part 45
11	Mortar Sights	Must know the construction and use of mortar sights. Must be able to: (a) disassemble and assemble, (b) test and adjust, (c) carry out mechanical repairs.	EME Manual Instruments B482 to B497, B520 to B522 TM 9-1335

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANIC (OPTICAL) GROUP 2

SERIAL	SUBJECT	STANDARD	REFERENCES
(a)	(b)	(c)	(d)
12	Gauges	Must know: (a) construction and use of vacuum and pressure gauges, (b) principles and safety precautions relating to oxy-acetylene regulators, (c) methods of repairing vacuum and pressure gauges. Must be able to: (a) disassemble and assemble, (b) test and adjust, (c) carry out mechanical repairs.	TM 9-1860 TM 9-2852 Para 16
13	Tachometers and Speedometers	Must know the construction and use of the speedometer and tachometer. Must be able to: (a) disassemble and assemble, (b) clean, (c) test and adjust, (d) carry out mechanical repairs.	TM 9-1829A
14	Instrument Stands and Mounts	Must know the construction and use of all types of instrument stands and simple instrument mounts. Must be proficient in carrying out mechanical repairs, modifications, and refinishing.	EME Manual Instruments A530-A537/3
15	Electrical Theory	Must know: (a) structure of matter, electron theory and electrical effects, (b) conductors and insulators, wire coverings, electrical circuits and kinds of currents, (c) Ohm's law and electrical units, (d) resistors in series and parallel,	A - Electricity (Siskind) B - Elements of Electricity (Haussemann) A - pages 2-7 B - pages 22-25, 33 A - pages 9-18 A - pages 45-49 A - pages 49-56 B - page 85

TRAINING STANDARD

ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

INSTRUMENT MECHANICAL (OPTICAL) GROUP 2

ERIAL	SUBJECT	STANDARD	REFERENCES
(a)	(b)	(c)	(d)
		(e) power and energy,	A - pages 57-60
		(f) magnetism and electromag-netism.	A - pages 143-152
		Must be able to:	
		(a) use and care for meters,	B - pages 107-122
		(b) read simple wiring diagrams,	
		(c) test and repair electrical circuits,	
		(d) splice, solder and insulate wire cable joints and con-nections.	

Instrument Technician, 1957

M E M O R A N D U M

HQ 1200-T3-1 (MT 2D)

27 Nov 57

Sub-Committee of the Army Trades Committee
Minutes - 83rd Meeting

1. The 83rd Meeting was held in Room 3524, "A" Bldg., on Tuesday, 26 Nov 57, at 1000 hrs.

2. The following attended:

A/Chairman	-	Maj SA Nicol	DMT
Members	-	Maj KC Pennie	D Org
		Capt WM Jessup	DQOP
Sponsors	-	Maj IR Greene	D Sigs
		Capt WJN Haggins	DEME
		Capt JR Caron	D Pay

3. Attention is directed to the agenda issued under cover of HQ 1200-T3-1 (MT 2D) dated 19 Nov 57, and HQ 1200-T3-1 (MT 2D) dated 21 Nov 57.

ITEM	SUBJECT	ACTION BY
1.	Minutes - 82nd Meeting Approved.	
2(a)	Instrument Technician Groups 1, 2 and 3 Consideration was given to the re-written and renamed specification for the existing trade of Instrument Mechanic Optical Groups 1, 2 and 3. There are no major changes in the overall knowledge and skills required. There are no financial implications. The proposed specification was approved for submission to ISTC.	D Org
2(b)	Instrument Artificer Group 4 Consideration was given to the re-written specification for the existing trade of Instrument Artificer Group Field Group 4. There are no major changes in the overall skills and knowledge required. It is proposed to delete the present trade of Instrument Artificer HD&AA (see ITEM 3) leaving only one Instrument Artificer trade. The modifying word Field has been dropped from the trade name. There are no financial implications.	D Org

DIRECTORATE OF STAFF DUTIES
A.H.Q.
NOV 28 1957
General Staff Branch

.../2

ITEM	SUBJECT	ACTION BY
	The proposed specification was approved for submission to ISTC.	
2(c)	Pay Clerk Groups 1, 2 and 3	D Org
	Consideration was given to the re-written specification for the existing trade of Clerk Accounting Pay Groups 1, 2 and 3.	
	The specification has been revised to include the training references and has been written in greater detail. The name has been changed to that commonly used in the Corps.	
	There are no changes in the duties performed, the skills and knowledge required, or the method of qualification. There are no financial implications.	
	The proposed specification was approved for submission to ISTC.	
2(d)	Teletype Operator Groups 1 and 2	D Org
	The ISTC, at meeting 5/57, approved a proposed specification for Teletype Operator Groups 1 and 2 but rejected the proposed specification for Teletype Supervisor Group 3.	
	Certain skills and knowledge appearing in the proposed specification for Teletype Supervisor Group 3 are required in the trade of Teletype Operator making it necessary to revise the specification for this trade.	
	Consideration was given to the revised specification for Teletype Operator Groups 1 and 2.	
	There are no financial implications.	
	The proposed specification was approved for submission to ISTC.	
3.	Instrument Technician HD&AA Group 3 Instrument Artificer HD&AA Group 4	Secretary
	Consideration was given to the deletion of Instrument Technician HD&AA Group 3 and Instrument Artificer HD&AA Group 4 from the list of authorized trades.	
	There is no longer a requirement for tradesmen to be trained on Harbour Defence fire control instruments. There are only two equipments left in use which are obsolescent, with the probability that in two years even they will be discarded.	

ITEM	SUBJECT	ACTION BY
	The AA equipment for which these tradesmen were trained, namely the 3.7" AA FCl equipment, is now obsolete and no longer in use.	
	The proposed deletions were approved for submission to ATC.	

(WHV Matthews) Lt-Col
Chairman
Sub-Committee of the Army Trades Committee

DISTRIBUTION

DMT
DSD
D Org
DQOP
D Sigs
DEME
D Pay

Instrument Technician
Group 1 & 2 & 3, 1962

Instrument Technician Groups 1, 2, and 3

Army Trade Specification J.42

1. General Information

1.1. Classification

Full Title	Abbreviation	Code Number	
Instrument Technician	Inst Techn	Group 1	3961
		Group 2	3962
		Group 3	3963

1.2. Selection Requirements

1.2.1. Candidates must be members of The Corps of Royal Canadian Electrical and Mechancial Engineers or be willing to, and be acceptable for transfer to that corps.

1.2.2. Minimum “M” score and educational level: 150 and Grade 9.

1.2.3. PULHEMS Profile

Battle	Support	Base
3333312	3333313	4344314

2. Summary

2.1. Inspects, repairs, rebuilds, tests and adjusts optical and mechanical instruments.

3. Duties and Tasks

3.1. Manufactures and fits parts of optical and mechanical instruments using hand and power tools and precision measuring instruments.

3.2. Refinishes instruments by spray and hand painting, bronzing, bluing and by filling engraved scales.

3.3. Interprets simple drawings and makes sketches for the repair and manufacture of parts and for the modification of instruments.

3.4. Reconditions optical systems by cleaning and replacing lenses, prisms and mirrors and cementing compound lenses.

3.5. Inspects, repairs and rebuilds instruments such as binoculars, telescopes, rangefinders and angle measuring instruments and such miscellaneous equipment as vacuum and pressure gauges and speedometers.

3.6. Tests and adjusts instruments using optical and mechanical test equipment.

3.7. Uses technical manuals, parts lists, scales documents and other technical publications for repair procedures, details of modifications and the identification and ordering of parts.

3.8. Instructs junior tradesmen in the performance of their duties.

4. Training, Experience, Skills and Knowledge Required

4.1. The tradesman requires the skills and knowledge described in this specification. The degrees of skill and knowledge will be determined from the references listed for each trade group. To qualify in a particular group, he must reach the level shown but not any higher level.

4.2. Only the publications shown below will be used as reference material:

AEM - Applicable Equipment Manual.

DCE - Canadian Army Manual of Training, CAMT 2-82 - Principles of Electricity - 1955.

EDR - Engineering Drawing by French and Vierck - 8th Edition - 1953.

EME - Canadian Army Electrical and Mechancial Engineering Manual.

ENO - Elementary Notes on Optics and their Application to Service Instruments - HM Stationery Office - 1941.

GPE - Gorton Pantograph Instruction Book and Parts Catalogue - Form 1385E.

HMT - United States Technical Manual, TM 9-243 - Use and Care of Handtools and Measuring Tools - 1960.

MMR - United States Technical Manual, TM 11-5500 - Multimeter T8297/U - Jul 55.

MSP - Machine Shop Theory and Practice by Wagner and Arthur - 2nd Edition - 1950.

MTO - Machine Tool Operation, Part I by Burghardt, Axelrod and Anderson - 5th Edition.

MTS - United States Technical Manual, TM-9-6103 - Telescope Mounts M3A1, M18A1, M21A1, M25, M30, M44, M44A1, M69 and M76 - Dec 54.

OMT - United States Technical Manual, TM 9-242 - Fundamentals of Ordnance Machine Tools - Feb 59.

POH - Pultra Lathe Operator's Handbook.

RSP - RCEME School Precis.

WTA - United States Technical Manual, TM 9-237 - Welding, Theory and Application - Oct 58.

Group 1

4.3. To perform his duties satisfactorily, the group 1 tradesman must:

4.3.1	Be able to read simple mechanical drawings.	EDR: chaps 6, 7, 10, 11, 13, 14, 20 & 22.

4.3.2	Be able to care for and use the common hand tools and measuring instruments contained in an instrument technician's tool kit.	MSP: pp 1 to 5, 19, 20 & 244 to 254.
4.3.3	Know the safety precautions applicable to an instrument shop.	MTO: pp 35 to 42.
4.3.4	Be able to:	
4.3.4.1	Soft solder.	HMT: paras 126 to 130.
4.3.4.2	Thread, using taps and dies from 1/16-inch to 1/4-inch diameter.	HMT: paras 223 to 230.
4.3.4.3	File flat surfaces up to 4 square inches to within .004-inch.	HMT: paras 179 to 181.
4.3.4.4	Scrape flat surfaces to have a 50% bearing surface on 9 square inches.	MSP: pp 276 to 281.
4.3.4.5	Ream, using reamers up to No 4 taper pin.	HMT: paras 219 to 222.
4.3.5	Know the methods of:	
4.3.5.1	Laying out work.	RSP: no 2-1-5/1 and MTO: pp 147 to 150 & 156 to 159.
4.3.5.2	Indentifying metals in common use in instruments.	MSP: pp 225, 256 & paras 24 to 28.
4.3.5.3	Annealing, hardening and tempering instrument hand tools.	OMT: para 207.
4.3.5.4	Silver soldering butt and lap joints.	RSP: no 2-10-10.
4.3.6	Be able to drill holes and position them to within .010-inch using number drills 1 to 60.	HMT: paras 20 & 24 to 34.
4.3.7	Be able to use a portable power drill of up to 1/4-inch capacity.	OMT: paras 211, 212 & 215.
4.3.8	Know the methods of using a bench grinder to sharpen:	OMT: paras 41, 42, 48, 50 & 51.
4.3.8.1	Lathe tool bits.	MTO: pp 286 to 300.
4.3.8.2	Instrument hand tools and gravers.	RSP: no 1-22-4.
4.3.8.3	Drills.	HMT: para 21.
4.3.9	Know the methods of using an oil-stone to finish-sharpen gravers and tool bits.	RSP: no 1-22-4 & 2-2-23.
4.3.10	Be able to use a precision lathe of up to 6-inch swing to:	MTO: pp 239 to 264, 304, to 309, 340 & 341.
4.3.10.1	Straight turn to within .005-inch using chucks and collets.	MTO: pp 370 to 376, 343 & 344.
4.3.10.2	Straight turn work between centres to within .005-inch.	MTO: pp 317 to 327, 336 to 340 & 342.
4.3.10.3	Drill, using drills up to 1/4- inch and position holes to within .005-inch.	MTO: pp 384 to 387.
4.3.10.4	Knurl.	MTO: pp 361 & 362.

4.3.10.5	Bore, to within .005-inch of a specified diameter.	MTO: pp 390 to 395.
4.3.10.6	Part, using a parting tool.	MTO: pp 381 to 383.
4.3.10.7	File and polish.	MTO: pp 348 to 351.
4.3.10.8	Turn to a shoulder.	MTO: pp 352 to 354.
4.3.11	Know the methods of:	
4.3.11.1	Making press and running fits on work up to 1/2-inch diameter.	MTO: p 518.
4.3.11.2	Trueing shafts and spindles of up to 1/4-inch diameter.	RSP: no 1-3-5 paras 44 to 53.
4.3.12	Be able to use an instrument miniature precision lathe, using hand gravers and the slide rest, and the compound test to:	
4.3.12.1	Straight turn on round stock of between 1/8-inch and 3/16-inch and not more than 1-inch in length to within .002-inch diameter using chucks and collets.	POH.
4.3.12.2	Straight turn between centres on round stock of between 3/16-inch and 1/4- inch diameter and not more than 1 1/2-inch in length to within .002-inch diameter.	POH.
4.3.12.3	Drill, using number drills 40 to 60 and pivot drills.	POH.
4.3.12.4	Bore.	RSP: no 1-22-1.
4.3.12.5	Face.	RSP: no 1-22-2.
4.3.12.6	Polish compass pivots.	RSP: no 1-22-3.
4.3.13	Be able to use a small flexible shaft machine.	OMT: paras 217d, 219 & 220.
4.3.14	Be able to calculate ratios, set up the pantograph and use the pantograph engraving machine to engrave on flat surfaces using standard copy and the 90° tracing style.	GPE: pp 23, 24 & 39.
4.3.15	Be able to sharpen conical pointed cutters using a cutter grinder.	GPE: pp 33 to 35.
4.3.16	Be able to carry out the user's maintenance on:	
4.3.16.1	A 6-inch precision lathe.	MTO: pp 246 & 247.
4.3.16.2	A 1/2-inch drill press.	AEM.
4.3.16.3	A bench grinder.	AEM and OMT: para 45.
4.3.16.4	An instrument miniature precision lathe.	POH.
4.3.16.5	A pantograph engraving machine.	GPE: pp 4, 7 & 8.
4.3.17	Be able to refinish instruments by:	

4.3.17.1	Preparing the surfaces.	EME: Instr A 251/1 paras 11 to 17.
4.3.17.2	Bronzing.	EME: Instr A 251-2.
4.3.17.3	Priming, painting and lacquering.	EME: Instr A 251/1 paras 1 to 10 & 18 to 56 & Gen T 100.
4.3.17.4	Filling scales.	RSP: no 1-3-3.
4.3.18	Know the types of solvent used for cleaning instruments and leather cases, the lubricants used in instruments and their methods of use.	EME: Instr A 131.
4.3.19	Be able to clean optical components with the exception of reticles (graticules).	EME: Instr A 274 paras 1 to 22 & 26 to 30.
4.3.20	Know the methods of handling cleaned optical components and mounting them in their cells.	RSP: no 1-30-1.
4.3.21	Know the methods of cleaning reticles.	EME: Instr A 274 paras 23 to 25.
4.3.22	Know the following optical theory:	
4.3.22.1	The principles of light.	ENO: chaps 1 & 2.
4.3.22.2	Optical definitions and terms.	RSP: no 1-24-1.
4.3.22.3	Reflection at plane surfaces.	ENO: chap 3.
4.3.22.4	Principles of refraction.	ENO: pp 27 to 31.
4.3.22.5	Total reflection.	ENO: chap 6.
4.3.22.6	The function of prisms used in simple optical instruments.	ENO: pp 47 to 52 & 55.
4.3.22.7	The types of lenses and image formations.	ENO: pp 57 to 61.
4.3.22.8	The solar method of finding the focal length of a lens.	ENO: p 61.
4.3.22.9	Principles of simple telescopes.	ENO: pp 66 to 68.
4.3.22.10	Basic eyepiece designs and functions of object glasses.	ENO: pp 85 to 89.
4.3.22.11	Principles of binoculars.	ENO: pp 81 to 84.
4.3.22.12	Principles of testing telescopes and binoculars.	ENO: pp 95 to 107.
4.3.23	Be able to recognize spherical and chromatic aberrations.	ENO: pp 90, 91 & 115 to 117.
4.3.24	Know the purpose and care of coated lenses and be able to identify them.	EME: Instrs A 274 & A 275.
4.3.25	Be able to replace spirit bubbles.	RSP: no 1-3-4.
4.3.26	Know the methods of:	
4.3.26.1	Separating and re-cementing lenses.	EME: Instr A 277.
4.3.26.2	Sealing instruments.	EME: Instr A 253 paras 1 to 13 & 15 to 64 & Instr X 590.
4.3.26.3	Desiccating instruments.	EME: Instrs A 254, X 570/1, X 570/2 & X 572/1.

4.3.26.4	De-aerating apparatus.	EME: Instr X 580.
4.3.26.5	Pressure testing instruments.	EM7E: Instr A 255
4.3.27	Know the basic theory of electricity and of elementary DC circuits.	DCE: Lessons 1 to 6.
4.3.28	Be able to test DC lighting circuits in instruments using a multimeter.	AEM.
4.3.29	Know the effects of terrestial magnetism on compasses.	DCE: Lesson 7 and EME: Instr A 192 para 34.
4.3.30	Know the methods of checking and using:	
4.3.30.1	A projection type binocular collimator.	EME: S-144 pp 11-14 and RSP: no 1-31-1.
4.3.30.2	A compass collimator.	EME: Instr X 120.
4.3.30.3	A collimator No 2.	EME: Instr X 130 and RSP: no 1-31-3.
4.3.30.4	The auxiliary telescope No 2.	EME: Instrs X 260, X 261, X 262 & X 264.
4.3.30.5	A collimator small general purpose.	none.
4.3.30.6	The tripod testing scales and adapters.	EME: Intrs X 370, X 370/16, X 371/16, X 380/1, X 380/2, X 380/3 & X 380/4.
4.3.30.7	A sub-standard compass.	EME: Instr X 510 and RSP: no 1-31-4/1.
4.3.30.8	The magnetometer and magnetizing apparatus.	EME: Instrs X 521, X 522 & X 530.
4.3.30.9	The calibrating machine for speedometers and tachometers.	none.
4.3.30.10	The dead weight testing apparatus.	none.
4.3.30.11	A board definition.	none.
4.3.30.12	An interocular gauge.	none.
4.3.31	Know the methods of inspecting, disassembling, repairing, reassembling, testing and adjusting:	
4.3.31.1	Quadrants gunner Mk 6 and M1A1.	EME: Instrs B 120, B 123, B 124, B 120/1, B 122/1, B 123/1 & B 124/1.
4.3.31.2	Quadrants elevation M9.	EME: Instrs B 192 & B 194.
4.3.31.3	Sights M4.	EME: Instrs B 520, B 522 and RSP: no 1-7-1.
4.3.31.4	Stands instrument CDN No 2 Mk 1, No 18 Mk 2 and No 14 Mk 3; Tripods telescope C No 47 Mk 1; Tripods instrument CDN No 1 Mk 1 and Tripods M 15.	EME: Instrs C 710, C 720, C 790, C 807 & C 820 and RSP: no 1-7-3.
4.3.31.5	Compasses prismatic liquid CDN Mk 1.	EME: Instrs D 162, D 163 & D 164.

4.3.31.6	Instrument lights.	EME: Instrs R 450, R 452 & R 460 and RSP: no 1-7-2.
4.3.31.7	Binoculars prismatic No 2 CDN Mk 2/5 and No 5 CDN Mk 2/4.	EME: Instrs S 140, S 142, S 143, S 144, S 150 & S 152 and RSP: no 1-26-1.
4.3.31.8	Periscopes tank No 15 Mk 1 and No 17 Mk 1.	EME: Instrs S 270/1, S 272/1 & 278/1 and RSP: no. 1-7-4.
4.3.31.9	Episcopes tank No 7 Mk 1 and No 8 Mk 1.	EME: Instrs S 310/1, S 312/1 & S 318/1.
4.3.31.10	Telescopes sniper Cl.	EME: Instrs S 630, S 632 & S 634.
4.3.31.11	Telescopes observation M49 and Telescopes observing sniper C Mk 1.	EME: Instrs T 450, T 452, T 453, T 454 & S 450 and RSP: no 1-25-2.
4.3.31.12	Projectors still picture overhead daylight.	EME: Instrs Z 650/1, Z 652/1 & Z 654/1.
4.3.31.13	Projectors still picture slide	none.
4.3.31.14	and 35-mm film strip. Epidiascopes.	none.
4.3.31.15	Speedometers and tachometers.	RSP: no 1-7-8.
4.3.31.16	Vacuum and pressure gauges.	none.

Group 2

4.4. In addition to the requirements for group 1, and to perform his duties satisfactorily, the group 2 tradesman must:

4.4.1	Be able to:	
4.4.1.1	File flat surfaces up to 4	HMT: paras 177 to 181.
4.4.1.2	square inches to within .002-inch. Scrape flat surfaces to have	HMT: pp 276 to 281.
4.4.1.3	a 60% bearing surface on 9 square inches. Lay out work.	MTO: pp 147 to 159.
4.4.1.4	Identify metals in common	WTA: paras 24 to 28.
4.4.1.5	use in instruments. Anneal, harden and temper	OMT: para 207.
4.4.1.6	instrument hand tools. Silver solder butt and lap joints.	RSP: no 2-10-10.
4.4.1.7	Sharpen on a bench grinder:	
4.4.1.7.1	Lathe tool bits.	MTO: pp 286 to 300.
4.4.1.7.2	Instrument hand tools and gravers.	RSP: no 1-22-4.
4.4.1.7.3	Drills.	MTO: pp 183 to 190.
4.4.2	Be able to use a precision lathe of up to 6-inch swing to:	

4.4.2.1	Straight turn to within .002-inch using chucks and collets.	MTO: pp 370 to 376, 343 & 344.
4.4.2.2	Straight turn work between centres to within .002-inch.	MTO: pp 336 to 340 & 342.
4.4.2.3	Bore to within .002-inch of a specified diameter.	MTO: pp 390 to 395.
4.4.3	Be able to:	
4.4.3.1	Make press and running fits on work up to 3/4-inch diameter.	MTO: p 518.
4.4.3.2	True shafts and spindles up to 1/2-inch diameter.	RSP: no 1-3-5 paras 44 to 53.
4.4.4	Be able to use an instrument miniature precision lathe to:	
4.4.4.1	Straight turn on round stock of between 1/16-inch and 1/8-inch diameter and not more than 1-inch in length to within .001-inch using chucks and collets.	POH.
4.4.4.1	Straight turn between centres on round stock of between 1/8-inch and 3/16- inch diameter to within .001-inch.	POH.
4.4.5	Be able to clean all optical components including reticles and mount them in their cells.	EME: Instr A 274 and RSP: no 1-30-1.
4.4.6	Be able to:	
4.4.6.1	Separate and re-cement lenses.	EME: Instr A 277.
4.4.6.2	Seal instruments.	EME: Instr A 253 paras 1 to 13 & 15 to 64.
4.4.6.3	Desiccate instruments.	EME: Instrs A 254, X 570/1, X 570/2 & X 572/1.
4.4.7	Be able to check and use:	
4.4.7.1	Projection type binocular collimators.	RSP: no 1-31-1.
4.4.7.2	Compass collimators.	EME: Instr X 120 and RSP: no 1-31-4/1.
4.4.7.3	Collimators No 2.	EME: Instr X 130 and RSP: no 1-31-3.
4.4.7.4	Auxiliary telescopes No 2 Mk 1 and Mk IB.	EME: Instrs X 260, X 261, X 262 & X 264.
4.4.7.5	Collimators small general purpose.	none.
4.4.7.6	Tripod testing scales and adapters.	EME: Instrs X 370, X 370/16, X 371/16, X 380/1, X 380/2, X 380/3 & X 380/4.

4.4.7.7	Sub-standard compasses.	EME: Instr X 510 and RSP: no 1-31-4/1.
4.4.7.8	Magnetometer and magnetizing apparatus.	EME: Instrs X 521, X 522 & X 530.
4.4.7.9	Calibrating machines for speedometers and tachometers.	none.
4.4.7.10	Dead weight testing apparatus.	none.
4.4.7.11	Board definitions.	none.
4.4.7.12	Interocular gauges.	none.
4.4.8	Be able to inspect, disassemble, repair, reassemble, test and adjust:	
4.4.8.1	Quandrants gunner Mk 6 and M1A1.	EME: Instrs B 120, B 123, B 124, B 120/1, B 122/1, B 123/1 & B 124/1.
4.4.8.2	Quadrants elevation M9.	EME: Instrs B 192 & B 194.
4.4.8.3	Sights M4.	EME: Instrs B 520 & B 522 and RSP: no 1-7-1.
4.4.8.4	Stands instrument CDN No 2 Mk 1, No 18 Mk 2 and No 14 Mk 3; Tripods telescope No 47 Mk 1; Tripods instrument CDN No 1 Mk 1 and Tripods M 15.	EME: Instrs C 710, C 720, C 790, C 807 & C 820 and RSP: no 1-7-3.
4.4.8.5	Compasses prismatic liquid CDN Mk 1.	EME: Instrs D 162, D 163 & D 164.
4.4.8.6	Instrument lights.	EME: Instrs R 450, R 452 & R 460 and RSP: no 1-7-2.
4.4.8.7	Binoculars prismatic No 2 CDN Mk 2/5 and No 5 CDN Mk 2/4.	EME: Instrs S 140, S 142, S 143, S 144, S 150 & S 152 and RSP: no 1-26-1.
4.4.8.8	Periscopes tank No 15 Mk 1 and No 17 Mk 1.	EME: Instrs S 270/1, S 272/1 & 278/1 and RSP: no 1-7-4.
4.4.8.9	Episcopes tank No 7 Mk 1 and No 8 Mk 1.	EME: Instrs S 310/1, S 312/1 & S 318/1.
4.4.8.10	Telescopes sniper Cl.	EME: Instrs S 630, S 632 & S634.
4.4.8.11	Telescopes observation M49 and Telescopes observing sniper C Mk 1.	EME: Instrs T 450, T 452, T 453, T 454 & S 450 and RSP: no 1-25-2.
4.4.8.12	Projectors still picture daylight.	EME: Instr Z 650/1, Z 652/1 & Z 654/1.
4.4.8.13	Projectors still picture slide and 35-mm film strip.	none.
4.4.8.14	Epidiascopes.	none.
4.4.8.15	Speedometers and tachometers.	RSP: no 1-7-8.

4.4.8.16	Vacuum and pressure gauges.	none.

Group 3

4.5. In addition to the requirements for group 2, and to perform his duties satisfactorily, the group 3 tradesman must:

4.5.1	Be able to use the following precision inspection tools:	References
4.5.1.1	Surface plates.	MSP: pp 264 & 265.
4.5.1.2	Gauge blocks.	MSP: pp 259 to 262.
4.5.1.3	Telescopic gauges.	MSP: pp 12 & 13.
4.5.1.4	Small hole gauges.	MSP: p 13.
4.5.1.5	Dial indicators.	MSP: pp 33 & 34.
4.5.1.6	Vernier calipers, height gauges and protractors.	MSP: pp 26 to 32.
4.5.1.7	Depth micrometers.	MSP: pp 22 & 23.
4.5.1.8	Inside micrometers.	MSP: pp 21 & 22.
4.5.2	Be able to produce simple working sketches.	EDR: paras 28.20 to 28.25 and RSP: nos 1-34-1 & 1-34-2.
4.5.3	Be able to:	
4.5.3.1	File flat and irregular surfaces up to 4 square inches to within .001-inch.	HMT: para 179.
4.5.3.2	Scrape flat and curved surfaces to have 75% bearing surface on 9 square inches.	MSP: pp 276 to 281.
4.5.3.3	Drill matched holes.	MTO: pp 201 to 203.
4.5.3.4	Select and use hand reamers to ream holes up to 1/2-inch diameter to within 0.0005-inch.	HMT: paras 219 to 222.
4.5.3.5	Use a precision lathe of up to 6-inches swing to:	
4.5.3.5.1	Straight turn to within .001-inch.	MTO: pp 370 to 376, 343 & 344.
4.5.3.5.2	Form and neck.	MTO: pp 355 & 356.
4.5.3.5.3	Cut external and internal threads up to No 3 fit tolerance.	OMT: para 85.
4.5.3.5.4	Turn tapers up to 1-inch diameter to within .001-inch.	OMT: para 84.
4.5.3.6	Engrave on curved surfaces using the roll attachment on a pantograph engraving machine.	GPE: pp 29 & 30.

4.5.3.7	Sharpen square nose cutters for a pantograph engraving machine using a cutter grinder.	GPE: p 36.
4.5.4	Be able to identify and measure tapers and threads.	MTO: pp 398, 402, 417 to 431, 527 & 528.
4.5.5	Be able to manufacture and temper small coil springs.	RSP: no 2-5-3.
4.5.6	Know the following optical theory:	
4.5.6.1	Reflection from curved surfaces.	ENO: chap 4.
4.5.6.2	Refraction.	ENO: pp 31 to 41.
4.5.6.3	Concave, convex and cylindrical lenses.	ENO: pp 61 to 64.
4.5.6.4	The structure of the human eye.	ENO: chap 11.
4.5.6.5	Stereoscopic vision.	ENO: pp 77 to 81.
4.5.6.6	Erecting and pentagonal prisms.	ENO: pp 53, 54, 56 & 57.
4.5.6.7	Principles of optical systems.	ENO: pp 69 & 80.
4.5.6.8	The optical system of the split field rangefinder.	EME: Instr M 012.
4.5.7	Know the principles of inspecting and testing:	
4.5.7.1	Telescopic systems.	EME: Instr A 190.
4.5.7.2	Split field type rangefinders.	EME: Instr A 191.
4.5.7.3	Angle measuring instruments.	EME: Instr A 192 paras 1 to 22, 31 to 74 & 79 to 104.
4.5.8	Know the causes of fungus in optical instruments and the methods used to prevent it.	EME: Instr A 278.
4.5.9	Be able to set up, inspect and use the instrument testing scales and adapters.	EME: Intrs X 350, X 351, X 352 & X 360/1.
4.5.10	Have a knowledge of the types and common faults in worm and worm gear mechanisms used in instruments and be able to repair and refit mechanisms.	RSP: no 1-3-5 paras 1, 43 & 54 to 81.
4.5.11	Be able to inspect, disassemble, repair, reassemble, test and adjust:	
4.5.11.1	Aiming Circles Cl.	EME: Instr B 240 and RSP: no 1-7-11.
4.5.11.2	Telescopes panoramic CDN No 1 Mk 1 or Mk 2.	EME: Instr B 550 and RSP: no 1-25-1.
4.5.11.3	Mounts telescope M23.	EME: Instrs C 052, C 200, C 202, C 203 & C 204.

4.5.11.4	Rangefinders No 12 and No 13.	EME: Instrs M 012, M 104, M 130, M 132, M 133, M134 & X 300.
4.5.11.5	Telescopes elbow M16A1D and M92D.	EME: Instrs T 300, T 332, T 333/1, T 334/1, T 350, T 352.
4.5.11.6	Engineer's levels.	RSP: no 1-7-12.
4.5.11.7	Surveying equipment except theodolites.	none.
4.5.11.8	Mounts telescopes M21A1 and M25.	EME: Instrs C 400, C 402, C 403, C 410 & C 412 and RSP: nos 1-20-1 & 1-20-3.
4.5.11.9	Mounts telescope M90.	EME: Instrs C 230, C 232 & C 234.
4.5.11.10	Quadrants range M4A1.	EME: Instrs E 200 & E 202 and RSP: no 1-20-2.
4.5.11.11	Telescopes BCM65.	EME: Instrs S 170 & S 172.
4.5.12	Be able to inspect and do field tests and adjustments to Setters fuse M26 and M28.	EME: Instrs R 210, R 212 & R 220 and RSP: no 1-7-14.
4.5.13	Know the principles of barometers, barographs, thermometers and anemometers and the methods of repairing them.	RSP: nos 1-32-1, 1-32-2, 1-32-3 & 1-32-4.
4.5.14	Know section accounting procedures.	EME: Stat Ops Sec K.

5. Responsibility

5.1. An Instrument Technician Group 1 is responsible, under general supervision, for basic bench fitting, using and maintaining power tools and equipment and refinishing instruments.

5.2. The group 2 tradesman is responsible, under general supervision, for fitting parts and repairing, testing and adjusting certain optical and mechanical instruments.

5.3. The group 3 tradesman is responsible, under minimum supervision, for inspecting, testing, repairing and adjusting most optical and mechanical instruments.

6. Working Conditions

6.1. Physical

6.1.1. In static locations, duties are normally performed in a clean, warm and well-lighted workshop. In the field, he works in a workshop van.

6.2. Stresses

6.2.1. Mental stress is normal but increases when cleaning and adjusting optical components.

6.3. Occupational Hazards

6.3.1. Hazards include eyestrain, exposure to minor injuries such as cuts and abrasions, and occasional exposure to chemical fumes and acid burns.

7. Method of Qualification

7.1. Qualification for Group 1

7.1.1. Qualification may be obtained by passing a course authorized by Army Headquarters.

7.1.2. The scope of the course will include the requirements of paragraph 4.3 of this specification.

7.2. Qualification for Group 2

7.2.1. To qualify as an Instrument Technician Group 2, the candidate must be qualified as an Instrument Technician Group 1.

7.2.2. Qualification may then be obtained by passing a trade test authorized by Army Headquarters after having been certified by his commanding officer as proficient in the requirements of paragraph 4.4 of this specification.

7.2.3. The scope of the trade test will include the requirements of paragraph 4.4 of this specification.

7.3. Qualification for Group 3

7.3.1. To qualify as an Instrument Technician Group 3, the candidate must be qualified as an Instrument Technician Group 2.

7.3.2. Qualification may then be obtained by passing a course authorized by Army Headquarters.

7.3.3. The scope of the course will include the requirements of paragraph 4.5 of this specification.

8. Career Possibilities

8.1. Trade Progression

8.1.1. An Instrument Technician Group 3 may progress to Master Instrument Technician Group 4.

9. Related Occupations

9.1. Navy - None

9.2. Air Force - Instrument Technician

9.2.1. Dictionary of Civilian Occupational Titles Code Number

Instrument Maker II	4-75.130
Instrument Man	4-83.920

10. Implementing Instructions

10.1. This new specification replaces that for Instrument Technician Groups 1, 2 and 3 dated 1 Apr 58.

10.2. It has been reprinted to bring the training references up to date and there are no major changes in the skill and knowledge required.

10.3. Personnel now qualified as Instrument Technicians Groups 1, 2 or 3 are considered qualified in accordance with this new specification.

Effective Date: 1 Dec 62

Typewriter Mechanic
Group 1 & 2, 1951

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TO EDC 118-CR 117

DEPARTMENT OF NATIONAL DEFENCE

ARMY

ARMY TRADES COMMITTEE

DEAD

DEAD

FOR CROSS REFERENCES SEE INSIDE COVER

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VOL 1

1200-T3

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HQ 1200-T3 (Trg 2)

OTTAWA, 1 Aug 51

Summary of Minutes - 120th Meeting
Army Trades Committee

Herewith summary of the minutes of the 120th Meeting of the Army Trades Committee held in Room 3411 "A" Bldg., National Defence Headquarters, Thursday, 19 Jul 51 at 1000 hours.

The following attended:

Chairman -	Col F.A. Clift	DMT
	Lt-Col E.T. Munro	DSD
	Lt-Col N.J.W. Smith	DQOP
	Major P. Bertrand	D Org
	Lt-Col K.H. McKibbin	DMT
	Lt-Col W.H. Colling	DST
	Lt-Col H.T. Fosberry	DOS
	Capt H.E. Thorne	DOS
	Major C. Blair	CE
	Major D. Jannigan	D Arty
	Major J.W.P. Brian	D Inf
	Capt H. Erb	DEME
	Capt J.R. Morgan	DMI
Secretary -	Major C.D. Simpson	DMT

ITEM 1
Secretary,
Inter-Service Committee
on Trades & Trade Groups

Blacksmith

Proposed introduction of the trade of Blacksmith Groups 1, 2 and 3. Proposed trade specification for the trade of Blacksmith Groups 1, 2 and 3. The above proposals were approved by the Committee.

ITEM 2
Secretary,
Inter-Service Committee
on Trades & Trade Groups

Shoe Repairer

Proposed introduction of the trade of Shoe Repairer Group 1 which would be for personnel of any corps. Proposed trade specification for the trade of Shoe Repairer Group 1. The above proposals were approved by the Committee.

ITEM 3
Secretary,
Inter-Service Committee
on Trades & Trade Groups

Shoemaker

Proposed introduction of the trade of Shoemaker Groups 2 and 3 to replace the existing trade of Shoemaker Groups 1 and 2. Proposed trade specification for the trade of Shoemaker Groups 2 and 3. The above proposals were approved by the Committee.

ITEM 4
Secretary,
Inter-Service Committee
on Trades & Trade Groups

Typewriter Mechanic

Proposed introduction of the trade of Typewriter Mechanic, Groups 1 and 2 to replace the existing trade of Typewriter Mechanic, Groups 1, 2 and 3. Proposed trade specification for the trade Typewriter Mechanic, Groups 1 and 2. The above proposals were approved by the Committee.

ITEM 5
Secretary,
Inter-Service Committee
on Trades & Trade Groups

✓ Projector Mechanic

Proposed introduction of the trade of Projector Mechanic, Groups 1 and 2 to replace the existing trade of Senior Projectionist Groups 1 and 2. Proposed trade specification for the trade of Projector Mechanic Groups 1 and 2. The above proposals were approved by the Committee.

ITEM 6
Secretary,
Inter-Service Committee
on Trades & Trade Groups

✓ Tire Repairman

Proposed introduction of the trade of Tire Repairman, Groups 1, 2 and 3 to replace the existing trade of Tire Repairman Groups 2 and 3. Proposed trade specification for the trade of Tire Repairman, Groups 1, 2 and 3. The above proposals were approved by the Committee.

ITEM 7
Secretary,
Inter-Service Committee
on Trades & Trade Groups

✓ Intelligence Linguist

Proposed introduction of the trade Intelligence Linguist, Groups 1, 2 and 3 to replace the existing trade of Linguist, Groups 1 and 2. Proposed trade specification for the trade of Intelligence Linguist, Groups 1, 2 and 3. The above proposals were approved by the Committee.

ITEM 8
Secretary,
Inter-Service Committee
on Trades & Trade Groups

✓ Master Gunner

Proposed trade specification for the trade of Master Gunner, Group 4. The above proposal was approved by the Committee.

ITEM 9
Secretary,
Inter-Service Committee
on Trades & Trade Groups

✓ Reclassification of Tradesmen & Specialists

Proposed that the present list of authorized Army trades be split into two separate lists of tradesmen and specialists, and that authority be obtained for the granting of group pay to specialists on the same basis as for tradesmen.

The proposed definitions for tradesman and specialist are as follows, and both come within the scope of the definition of a tradesman as defined at the 97th Meeting of the PMC on 20 Sep 46, ie, "any individual who requires training, other than basic training":

(a) Tradesman

Any soldier who:

(i) Requires training and/or skill over and above that required for a trained soldier (ie, basic and corps training).

(ii) Performs work requiring special

AGENDA

ITEM 1 Blacksmith, Groups 1, 2 and 3

Introduction of the trade and trade specification of Blacksmith, Groups 1, 2 and 3. This was a wartime trade which was dropped because it was considered that the trade of Welder could carry out the duties of both the Welder and the Blacksmith. The production of a trade specification for Welder has not been possible due to the different requirements of RCE and RCEME. CE has recommended, therefore, that the trade of Blacksmith should be reintroduced as an RCE trade. Copy of trade specification is attached at Appendix "A".

Sponsored by CE.

ITEM 2 Shoe Repairer, Group 1

Introduction of the trade and trade specification of Shoe Repairer, Group 1. This specification proposes the introduction of the trade of Shoe Repairer, Group 1, which would be for personnel of any corps. This trade will meet the requirement for personnel in the infantry company who are qualified in the repair of footwear. The trade specification is attached at Appendix "B".

Sponsored by DOS.

ITEM 3 Shoemaker, Groups 2 and 3

Proposed trade specification for the trade of Shoemaker, Groups 2 and 3. This trade specification proposes that the trade be changed from a Group 1 and 2 trade to a Group 2 and 3 trade. The Shoe Repairer would take the place of the Group 1 Shoemaker. The trade specification is attached at Appendix "C".

Sponsored by DOS.

ITEM 4 Typewriter Mechanic, Groups 1 and 2

Proposed trade specification for the trade of Typewriter Mechanic, Groups 1 and 2. This specification proposes a reduction of the trade from Groups 1, 2 and 3 to Groups 1 and 2 as most of the Group 3 duties have now been taken over by Telecommunication Mechanics (L of C). Copy of trade specification is attached at Appendix "D".

Sponsored by DEME.

ITEM 5 Projector Mechanic, Groups 1 and 2

Proposed trade and trade specification for the trade of Projector Mechanic, Groups 1 and 2. This new specification proposes a change in the name of the trade Senior Projectionist, Groups 1 and 2, and deletes the clerical duties from the trade. Copy of the trade specification is attached at Appendix "E".

Sponsored by DEME.

ITEM 6 Tire Repairman, Groups 1, 2 and 3

Proposed trade specification for the trade of Tire Repairman, Groups 1, 2 and 3. This specification proposes that the trade of Tire Repairman be changed to a Group 1, 2 and 3 trade rather than a Group 2 and 3 trade. No trade specification has been issued for this trade, but it is authorized as a Group 3 trade. Copy of the trade specification is attached at Appendix "F".

Sponsored by DEME.

ITEM 7 Intelligence Linguist, Groups 1, 2 and 3

Proposed trade and trade specification for the trade of Intelligence Linguist, Groups 1, 2 and 3. This trade will replace the trade of Linguist, Groups 1 and 2, and the specification proposes an increase in the trade from Groups 1 and 2 to Groups 1, 2 and 3. No trade specification or trade standard has been issued for the trade of Linguist since the war, but the trade is authorized as a Group 2 trade. Copy of the trade specification is attached at Appendix "G".

Sponsored by DMI.

ITEM 8 Master Gunner, Group 4

Proposed trade specification for the trade of Master Gunner, Group 4. This is a new specification for which no post war standard has been issued, but the trade is authorized as a Group 4 trade. Copy of trade specification is attached at Appendix "H".

Sponsored by D Arty.

ITEM 9 Reclassification of Tradesmen and Specialists

A paper outlining the problem was forwarded to all members and sponsors on HQ 3667-1 TD 5 (Trg 2) dated 26 Jun 51.

Sponsored by D Arty, D Inf and DST.

Effective Date:

SPECIFICATION OF THE TRADE

TYPEWRITER MECHANIC, GROUPS 1 AND 2

JOB DESCRIPTION

1 Inspects, tests, cleans, adjusts, and repairs typewriters, adding machines, calculating machines, duplicators, and similar types of office machinery used by the Army.

2 Carries out periodic inspection of office machinery, and makes adjustments or minor repairs, as necessary, to ensure proper performance of the equipment.

3 Reports office machinery for repair through Department of Printing and Stationery, or other authorized channels, if it cannot be placed in a fully serviceable condition by adjustment and minor repair.

4 Advises units on the proper care and maintenance of office machinery.

GENERAL BREAKDOWN OF THE TRADE

Serial	Function
1	Use of hand tools
2	Repair of mechanical typewriters
3	Repair of duplicators
4	Repair of adding machines and calculators

NOTE: Detailed breakdown of each function included at Annexure 1.

QUALIFICATION FOR GROUP 1

5 Methods: Qualification may be obtained by one of the following

(a) Successful completion of a course authorized by Army Headquarters.

(b) Previous service qualification within the time limit prescribed.

(c) Possession of a certificate of apprenticeship qualification from a recognized office machinery manufacturing company.

(d) Trade test (when authorized).

6 The object of the course referred to in 5 (a) above, is to qualify candidates for repairing all makes of typewriters, and to give them the fundamental knowledge to enable them to learn the repair of other types of office machinery by in-job training.

7 The scope of the course is to teach:

(a) Terminology peculiar to the trade.

(b) Principles of operation of all types of office machinery.

(c) Use of measuring instruments, such as scales and micrometers, which may be used in the trade.

(d) Determination of metal types and characteristics.

(e) Maintenance of tools.

TYPEWRITER MECHANIC, GROUPS 1 AND 2 (cont'd)

7 (cont'd)

(f) Uses of applicable lubricants and cleaning solvents.

(g) Functions 1 and 2 of the Detailed Breakdown of the Trade.

QUALIFICATION FOR GROUP 2

8 In addition to Group 1, the candidate must be certified proficient by his Commanding Officer, with advice from technical officers or assessors when deemed necessary, in functions 3 and 4 as shown in the Detailed Breakdown of the Trade.

ANNEXURE 1

TYPEWRITER MECHANIC GROUPS 1 AND 2

DETAILED BREAKDOWN OF THE TRADE

1 Use of Hand Tools

(a) Measuring

(b) Layout for the modification of parts

(c) Sawing, filing and scraping

(d) Drilling and reaming

(e) Tapping and threading

(f) Hard and soft soldering

2 Repair of Mechanical Typewriters

(a) Analyzing defects from operation

(b) Disassembly and assembly of all types in current use

(c) Recognition of defective parts

(d) Cleaning

(e) Adjustments

(f) Lubrication

3 Repair of Duplicators

(a) Analyzing defects from operation

(b) Disassembly and assembly of stencil type duplicators

(c) Disassembly and assembly of fluid type duplicators

(d) Recognition of defective parts

(e) Cleaning

(f) Adjustments

(g) Lubrication

4 Repair of Adding Machines and Calculators

(a) Analyzing defects from operation

(b) Disassembly and assembly of adding machines

(c) Disassembly and assembly of calculators

(d) Recognizing defective parts

(e) Cleaning

(f) Adjustment

(g) Lubrication